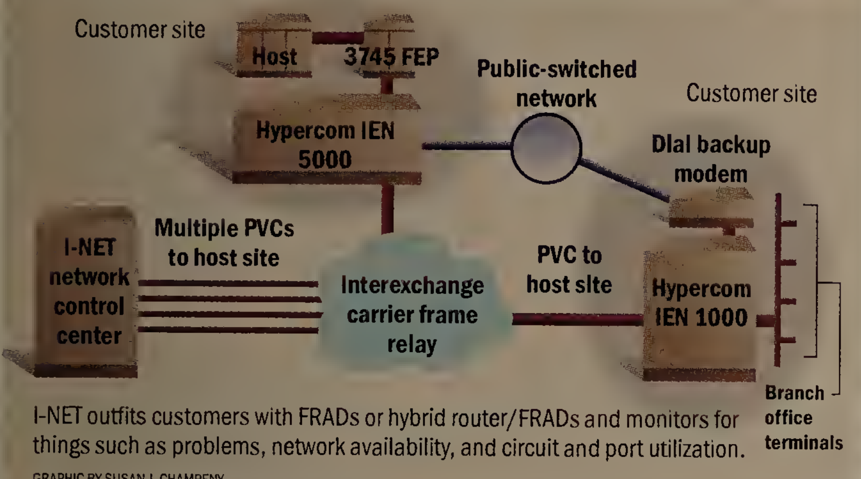
SEPTEMBER 18, 1995 VOLUME 12, NUMBER 38

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

SNA over frame relay without fear

I-NET's FRAD management service eases the migration to fast-packet nets.



I-NET outfits customers with FRADs or hybrid router/FRADs and monitors for things such as problems, network availability, and circuit and port utilization.

GRAPHIC BY SUSAN J. CHAMPENY

Managed FRADs give punch to SNA-over-frame service

By David Rohde
Bethesda, Md.

A fast-growing outsourcing firm soon will announce an SNA-over-frame relay offering under which it will monitor, manage and maintain customers' frame relay access devices.

I-NET, Inc.'s new WAN Assurance service will give users various frame relay configuration options, including the ability to integrate legacy Systems Network Architecture traffic with IP-based LAN traffic.

The firm will outfit customers with Phoenix-based Hypercom, Inc. frame relay access devices (FRAD) or hybrid router/FRADs, which I-NET will monitor around the clock from its net center control center here.

Equipment servicing will be

See **FRADs,** *page 77*

IBM redefines net control

Big Blue uncloaks intelligent agent strategy to help users manage multivendor nets.

By Michael Cooney and Jim Duffy
Raleigh, N.C.

IBM will begin to revamp its network management family this week with the introduction of a multivendor intelligent agent architecture and applications designed to give users better centralized control over distributed LAN resources.

The company's Common Agent Architecture defines how IBM and other vendors can build management agents that will enable users to control network devices across the enterprise. Apple Computer, Inc., Ki Networks, Inc. and Sun Microsystems, Inc. are expected to announce support of the new agents in products of their own.

Then, on Oct. 10, IBM will unveil the next phase in the plan by rolling out a variety of integrated net management applications for IBM and non-IBM management platforms.

The first of these applications will be IBM's Nways Manager for Windows. While it carries the IBM Nways Asynchronous Transfer Mode moniker, the Windows program will manage any token ring- or Ethernet-attached device containing the new agent code.

See **IBM,** *page 76*

Cabletron hot on mgmt. case

By Jim Duffy

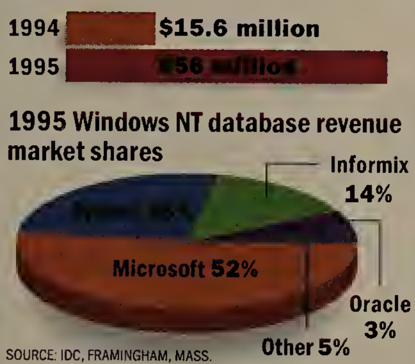
Cabletron Systems, Inc.'s Spectrum 4.0 could be the Johnnie Cochran of management when it ships early next year.

Much like lawyers turning to precedents to resolve disputes, the new version of Spectrum will employ a Case-Based Reasoning Tool (CBR) that solves network glitches by referring back to proven fixes.

With this new troubleshooting spin, Cabletron has issued a

See **Cabletron,** *page 76*

UP-AND-COMER


North American revenue for Windows NT-based databases

1995 Windows NT database revenue market shares

SOURCE: IDC, FRAMINGHAM, MASS.

NT gaining DBMS ground

Low cost, ease of management win over database users.

By Barb Cole

Insurance giant U.S. Fidelity and Guarantee Corp. (USF&G) historically has run its business on mainframes. But the company broke with tradition when it rolled out a new client/server policy-tracking application on Windows NT-based databases.

"We recognized that Unix is the platform of choice for client/server databases. But we felt that Windows NT would be a lot easier on our support technicians and provide an overall lower cost of ownership," said Tim Schiply, USF&G's manager

See **Windows NT,** *page 77*

Unisys goes it alone with Microsoft Mail rescue plan

By John Cox
Blue Bell, Pa.

A year ago, the rollout of Microsoft Mail to tens of thousands of users at Unisys Corp. almost ground to a halt...until the Unisys E-mail architects decided to ignore Microsoft Corp.'s rule book.

In the beginning, Unisys faithfully followed Microsoft's recommendations for the network configuration — outlying Microsoft Mail post offices were connected to a central hub server, where they dropped off and picked up messages. By last November, with 19,000 clients, the number of connections being attempted overwhelmed the server. Users complained loud and long about intolerable delays.

"Microsoft Mail is like most other LAN applications. They're designed for one department in one building on a LAN."

Gil Piddington

At Unisys, the solution was a distributed architecture that, paradoxically, was based on Microsoft's smaller, simpler LAN environment. The company switched to what it calls a local hub strategy, where managers separated mail functions into dedicated servers and arranged them in a hierarchical tree. The new architecture minimized connections by keeping local traffic on local mail subnets.

This scaling problem is not unique to Microsoft Mail. Most LAN-based electronic mail systems use a shared-file system, which becomes a bottleneck as more clients try to connect to it.

Unisys managers had hoped to sidestep this problem with Microsoft's Exchange messaging server, a true client/server messaging platform for Windows NT.

See **Unisys,** *page 14*

NEWSPAPER $5.00

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Fore partners to extend reach of ATM nets

By Michael Csenger
Warrendale, Pa.

ATM leader Fore Systems, Inc. is expected to unveil a broad initiative aimed at helping customers channel private branch exchange, frame relay and legacy circuit-switched traffic into campus and wide-area ATM networks.

Sources said Fore is partnering with Premisys Communications, Inc. to use Premisys access technology to bring voice, video and data traffic into Fore's campus and enterprise switches. Premisys, whose stock price has soared from a $16 initial public offering in April to around $90 now, makes devices that mix and match many types of traffic using a host of network protocols.

The Premisys IMACS family is built around a collection of feature modules that include frame relay, ISDN and inverse multiplexing. These modules work together to let, for example, customers run frame relay over inverse multiplexed ISDN links.

Premisys is announcing Asynchronous Transfer Mode support this week with the IMACS ATM Concentrator (ATMC), a

See **Fore,** *page 76*

CABLETRON LAN SWITC

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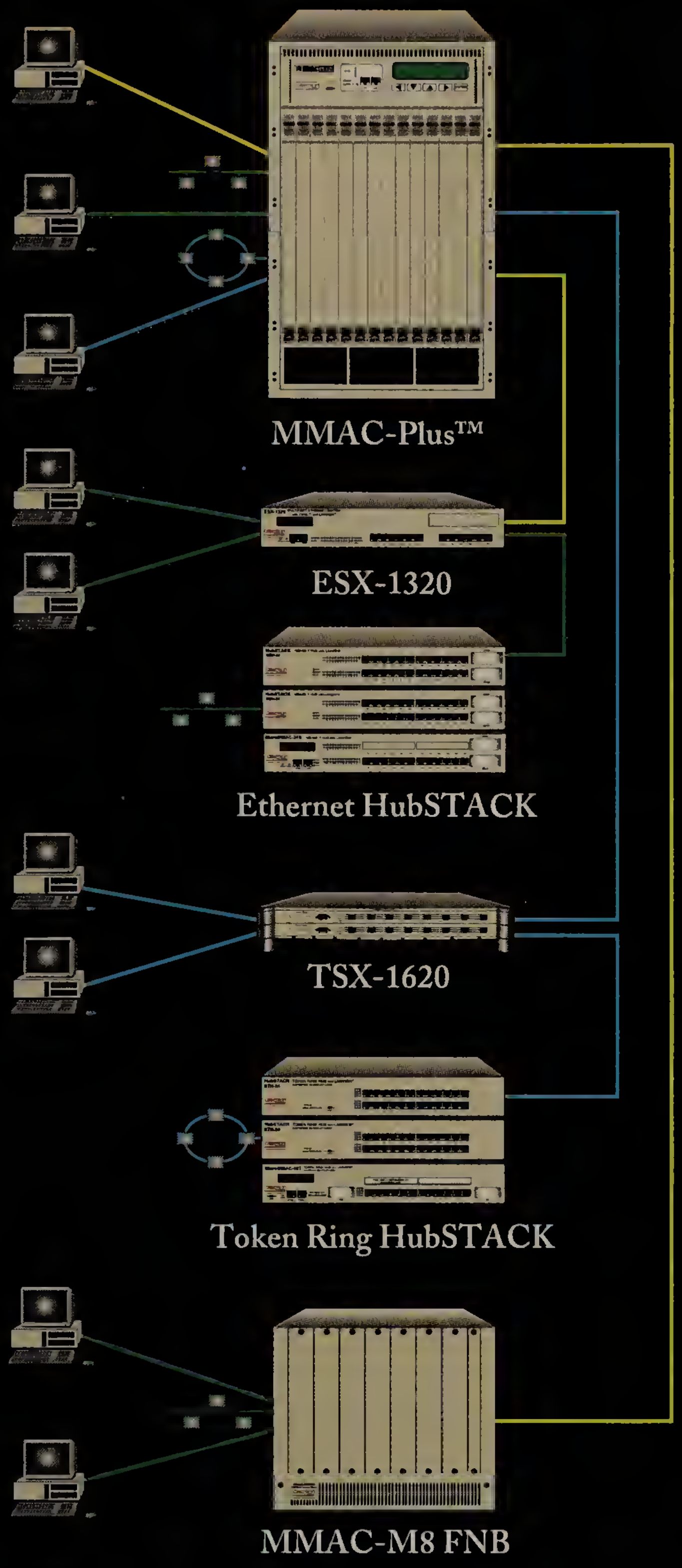

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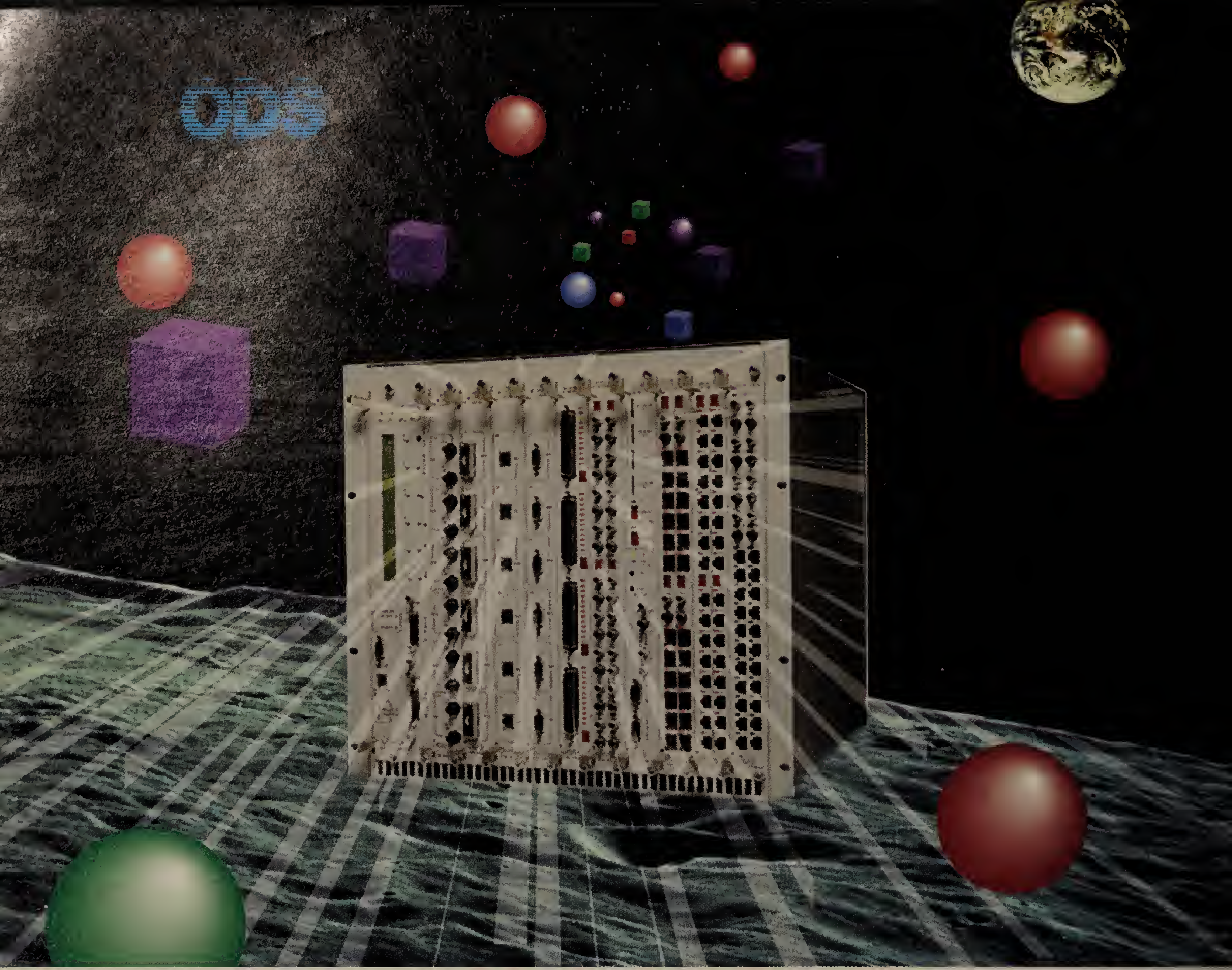

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Briefs, September 18, 1995

Coming across Sahara

■ Former General DataComm, Inc. (GDC) Asynchronous Transfer Mode guru Jonathan Reeves has resurfaced — along with two other ex-GDC executives — at a start-up called Sahara Networks, Inc. The Cheshire, Conn.-based company, backed by venture capital firm Bessemer Venture Partners, will focus on ATM WAN access technologies.

The on-line patrol

■ A consortium of 22 software and on-line service providers are working to develop a standard way of rating and filtering on-line information. The group, which includes AT&T, IBM, Microsoft Corp. and others, is defining a standardized method that can control information deemed unsuitable for minors. The group is also targeting employees who use on-line services to explore nonwork-related areas on company time.

She's baaaaack

STEVEN BORNS

Hancock

■ National Semiconductor Corp. last week named former IBM networking head honcho Ellen Hancock as chief operating officer and executive vice president. She will be charged with moving the firm beyond its traditional role as a chip maker into areas such as telecommunications, multimedia and wireless communications.

OK Microsoft, you win

■ In response to Microsoft Corp.'s less-than-complete adherence to the Desktop Management Interface (DMI), the Desktop Management Task Force (DMTF) now says support of the DMI's Component Interface is not required for DMI compliance. Last year, Microsoft said it would not implement the DMI Component Interface in Windows 95, using instead its own Plug and Play drivers to access desktop configuration information (*NW*, Nov. 21, 1994, page 1). The DMTF is expected to outline DMI compliance guidelines next week.

MCI goes on the air

■ MCI Communications Corp. last week made its maiden voyage into the wireless services market by launching a business-oriented cellular telephone service called networkMCI Cellular. The carrier, whose entry into the wireless world was delayed when it scrapped plans to buy Nextel Communications, Inc. and its spectrum licenses last year, said it initially will make its cellular service available in 10 U.S. markets. The service features, such as call forwarding, parallel those available on land-line nets.

Objects of desire

■ SunSoft, Inc. will announce next week the availability of its Solaris Distributed Object Environment (DOE), which is an object-oriented operating environment for distributed applications. The company will also announce an Internet front end to DOE and a set of business alliances with third-party companies.

Where's the wireless LAN?

■ If you're having trouble seeing RadioLAN, Inc.'s promised 10M bit/sec wireless LAN, it's not just because the offering is designed to send data through the air. The San Jose, Calif., company confirmed last week that it has pushed back availability of RadioLAN/10 this summer until the first-quarter 1996. Company officials attributed the delay to multipath interference problems caused by signals bouncing off walls, doors or other objects.

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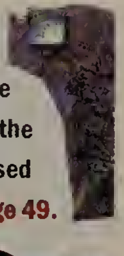

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NetworkWorld TEST ALLIANCE

NetworkWorld's *Mission: To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.*

Novell directory now undergoing upgrades

By Kevin Fogarty
Provo, Utah

Novell, Inc. is developing a series of enhancements to its NetWare Directory Services (NDS) that should make it easier for users to link their networks with corporate partners.

The new features let users share parts of their directory trees securely with other organizations and smooths the organization of large networks by geographic location.

The enhancements will appear late this year in AT&T NetWare Connect Services (ANCS) — the public IPX network Novell is building with AT&T — and then in NDS itself, sources said.

Later enhancements will include the ability to identify data volumes on NetWare servers by name instead of letter, as is currently required. That will make it possible for net managers to name a volume, making it easier to find.

Novell also plans to add software metering to NDS in the upcoming utility called Application Launcher, sources said.

All these steps are part of a broad plan to position NetWare as a network fabric that can use its directory, middleware, and file and print services to integrate a range of operating systems, according to sources familiar with the plan (*NW,* Sept. 4, page 1).

Part of the plan, which includes porting NDS to run on Windows NT and other operating systems, is to deliver a set of tools that would synchronize user information from Windows NT and Unix servers with NDS.

Management made easy

Enhancing the directory to make it easy to manage and use is a critical part of Novell's plan to put NDS at the heart of its customers' large networks, said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass.

One of the key ANCS enhancements, which will make managing large global networks easier, is an object that adds location tracking to NDS.

The locality object, which exists in NDS but has been inaccessible until now, lets users set up a directory based on the location of users and resources. That eases NDS management by making the rules of hierarchical directory naming more flexible. It also makes the NDS tree look to users in one location as if their branch is the entire tree, with a pointer that can pull them through to the master directory.

Another enhancement, federated partitions, will let two organizations overlap selected parts of their trees securely. Companies will be able to use the technology to temporarily link parts of their networks to make it easier to work on joint projects.

A third enhancement will make intercompany networking easier by loosening the rules NDS uses to define objects.

For example, rather than requiring all user objects to include identical data, NDS will be able to recognize similarly defined objects as belonging to the same class of user. This will prevent companies from having to revamp their NDS schemata to work together.

An updated NetWare Administration tool, due late this year, will access those capabilities.

Separately, Novell last week announced last week the NDS Enhancement Pack, which contains an updated version of NDS, and utilities to locate and report on the status of NDS replications across the net.

The new NDS code is faster and better at healing minor replication errors, while a new version of DS Repair will let administrators monitor replications from a single server. DSMaint.NLM consolidates the NDS tree for easier backup and recovery. The pack is available free on the NetWire CompuServe forum or at www.novell.com (*NW,* July 17, page 1). ■

The making of New-vell

Novell is trying to avoid Microsoft's strengths by getting out of the application server business and focusing on NetWare and NetWare Directory Services (NDS) as a network fabric supporting many operating systems. Tactics include:

- **Porting NDS to Windows NT and Unix.**
- **Integrating Tuxedo with Windows NT as a multi-NOS integration tool.**
- **Porting GroupWise to Windows NT and Unix platforms.**
- **Releasing NetWare SMP.**
- **Possibly offering most of its network products under the name PerfectNetwork and offering its client, TCP/IP and Web products under the name PerfectAccess.**
- **Focusing on NetWare Connect Services, NetWare Embedded Systems Technology, NDS and Tuxedo as key products.**

Big guns fire at enterprise printing flaws

By Annmarie Timmins
Rochester, N.Y.

A document you need printed in 10 minutes is in limbo because your colleague is printing a 200-page report. A file you sent to a printer three states away never appeared. You want bullets in your presentation, but your printer gives you P's and Q's.

Those and other problems will disappear if two separate efforts, one from IBM the other from Digital Equipment Corp., Xerox Corp. and SunSoft, Inc., succeed.

The two camps have pledged to solve a gaggle of printing glitches common in a distributed environment with management schemes that reroute reports to free printers, update users about the status of a print request and send documents to only those printers that can understand their system's orders.

IBM Printing Systems Co. this week began shipping its Printing Systems Manager (PSM), software that allows administrators to centrally manage an enterprise's printing network.

PSM, which will initially run on IBM's AIX, includes server software and a graphical user interface (GUI) that gives administrators a map of the printing network, complete with alerts to problems or downed printers. The server software sells for $2,495, while the GUI for managing the network costs $4,995.

Cutting printing costs

It takes an administrator about 20 minutes to configure each printer, but this effort could save a company 10% to 25% of its printing costs by reducing the time and materials wasted with unsuccessful print attempts, said Kerry Bensman, director of software solutions at IBM Printing Systems.

IBM's PSM will allow administrators to characterize a printer according to its ability — whether it does double-sided printing, what its resolution is and if it prints in color. When one printer is in use, the job can then be automatically routed to only those printers that can offer the functions needed.

Meanwhile, Digital, SunSoft and Xerox last week announced an alternative, Printxchange, which will run on Digital's Digital Unix and Sun Microsystems, Inc.'s Solaris. The trio expects to ship the software, either bundled with operating systems or as a free drop-in to the operating system, by the middle of next year.

Printxchange will consist of three parts: client software to handle print requests, a spooler to store data, and a print supervisor that will act on requests and control print jobs.

The announcements are good news for users, said Charles LeCompte, editor and publisher of the *Hard Copy Observer,* an industry magazine based in Newtonville, Mass. "In the Unix environment, the print facilities are weak."

But this flurry of announcements may leave users confused, too. Six months ago, Novell, Inc. introduced a similar printing management plan for the NetWare environment, and Dazel Corp. for four years has been selling its management product, which also supports E-mail, faxes and pages.

The divisions are not clear-cut, either. Xerox has been a supporter of Novell's technology, and the Xerox alliance is still working with Novell to build a gateway between its product and Novell's NetWare Distributed Print Services. ■

Proteon to unleash remote access routers for under $800

By Jim Duffy
Westborough, Mass.

Proteon, Inc. this week will make its presence known across the remote access industry by introducing four routers, some priced at almost half that of comparable devices from market leader Cisco Systems, Inc.

The Proteon devices could spur a price war in the remote network access market, analysts said.

"It's priced very aggressively," said Charlie Robbins, vice president of communications research at Aberdeen Group, Inc. in Boston. "Others are going to do a similar thing."

Topping off Proteon's remote access arsenal is the RBX 250, which comes standard with two LAN connections and four WAN links. The product is suitable for district or regional offices and Internet Service Provider points of presence that require connectivity back out to multiple remote site routers, according to sources familiar with the products.

Proteon confirmed that it will announce new routers this week but the company declined to comment on specifics.

Users can configure the RBX 250 with two Ethernet interfaces, two token-ring interfaces or one of each. WAN interfaces include the RS-232, V.35, X.21 and V.36/RS-449, and speeds up to T-1/E-1. The WAN interfaces also support the Point-to-Point Protocol, Synchronous Data Link Control, X.25, V.25bis and frame relay protocols.

The RBX 250 runs Proteon's OpenRoute multiprotocol routing and Systems Network Architecture internetworking software.

The router is priced from $3,300 to $4,695 and will be available in November. Pricing for comparable products from Cisco — such as the 2513, 2514

See Proteon, *page 14*

Novell aims to build UnixWare group

Novell, Inc. is reportedly trying to negotiate itself out of the application serving market by building a consortium of Unix systems vendors to take over the development of UnixWare.

Sources said Hewlett-Packard Co. is closest to signing up, followed by Sun Microsystems, Inc., IBM and Digital Equipment Corp., and possibly The Santa Cruz Operation, Inc. and AT&T Global Information Solutions.

The deals are still ill-defined, however, and may result in NDS support by HP and one or two others, leaving Novell to continue its consortium-building efforts, while still pushing UnixWare as its choice of an applications platform, sources cautioned.

CORRECTION

The denomination of the table in Figure 1 that ran in the review of the Centillion 100 in the Sept. 4 issue was incorrect. Latency should have been measured in microseconds, not milliseconds.

Dave learns Solaris™ x86 was named
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Internet domain names free no more

By Ellen Messmer
Herndon, Va.

To some, the very soul of the Internet changed last week. The government-subsidized, free-for-all network went commercial when the Internet's domain registration service, InterNIC, announced that it will charge an annual fee for each domain name a company uses.

Outraged not so much by the dollar amount as the principle of it, Internet users and service providers lashed out at organizations that now play a role in determining domain name policy — the National Science Foundation (NSF), Network Solutions, Inc. (NSI) and the Internet Address and Number Authority. Users and providers argued that competition is needed in domain name registration services now that commercial fees are being levied.

THE NEW INTERNIC RULES ON DOMAIN NAMES:

- Commercial users must pay for second-level domain names under .com.
- The National Science Foundation will continue to fund domain names for educational and government organizations, .edu and .gov, respectively.
- New domain names will cost $100 per year.
- Existing domain names will cost $50 per year.
- Users will not be considered the owners of the names, merely the "holders."

The root of the new policy is the concept that users do not actually own domain names but merely hold them until revoked. With this as its backing, the Internet Network Information Center (InterNIC), based here, is now charging an annual $100 maintenance fee for new domain names and a $50 annual fee for domain names that already have been registered. On the bright side, NSI said there are no plans to charge for IP addresses, which are rapidly dwindling.

Operated by NSI under a $5 million government grant from the NSF, the InterNIC intends to use 70% of the revenue generated by the fees to help improve its service. The remaining 30% will be spent on undefined "intellectual infrastructure" projects by a special advisory board.

NSI said it needed the additional funding after the avalanche of domain name requests it has received of late crippled its operations and created a five-week registration delay.

Within just the last few weeks, the InterNIC has registered 200 domain names for Procter & Gamble Co. (P&G) and 150 for Kraft General Foods Corp.

P&G, which registered domain names such as diarrhea.com, badbreath.com, dandruff.com and underarm.com, may be told its personal hygienic names stink.

"It's an unwritten policy to encourage people to limit the number of domain names they register," said InterNIC spokesman Dave Graves. The P&G names were an "administrative error" and may be revoked, he said.

With the government planning to end subsidies for this service in 1998, the time has come to charge for domain names, said Donald Mitchell, NSF program manager.

The NSF plans to continue to pay for government and education domain names, so the new fees affect companies, organizations and networks registered under .com, .org. and .net, which account for about 97% of all 110,000 registered names.

There will be tremendous resentment about paying for domain names that the InterNIC already gave out for free, said Ajit Kapoor, manager of infrastructure architecture at Allied Signal Corp. If fees spiral in the future, companies are likely to get together to fight them, he added.

But in the minds of some users and service providers, the fees also raise the question of why any other organization should be handed a monopoly over domain names.

"The moment you start charging, free enterprise takes over," said Kapoor. "So why should there only be one body to do this registration?"

"NSF does not own what they gave NST a monopoloy to do," said Karl Denninger, president of Chicago-based Internet provider Macro Computer Solutions, Inc., whose [pleas to operate a competitive domain name registration service have so far gone unheard. ■

Netscape harvests cornucopia of World-Wide Web products

By Ellen Messmer
Mountain View, Calif.

This week, Netscape Communications Corp. will unveil a multimedia Web browser as well as a new suite of Web server management and publishing tools.

The Netscape Navigator 2.0 browser, out in beta this week, lets users access Web links using an integral Multi-purpose Internet Mail Extensions (MIME) mail package and drop in multimedia files such as GIF or JPEG images. By integrating the Web and mail functions, users do not have to switch back and forth between applications.

A number of multimedia document types, such as Adobe Portable Document Format (PDF), are being used to add audio, video and images to home pages created using the Web's simple text-based HyperText Mark-up Language (HTML). But remote users cannot take advantage of these home pages unless they have specific client software for the task.

Navigator 2.0, which supports about a dozen multimedia object types — including Adobe PDF, Macromedia Directory File, Novell, Inc. Envoy, Apple Computer, Inc. Quicktime, Intel Corp. Indeo and Progressive Networks, Inc. RealAudio — will be able to handle almost any document type on the 'Net today.

"In terms of integration with document types, no browser out there comes close to what Netscape is doing," said Steve Franco, an analyst with The Yankee Group. "Netscape is continuing to define the client software market."

Expected to ship next month, Navigator 2.0 will also let users interact with any Web site's interactive Java "applets." Java is the client/server programming language developed by Sun Microsystems, Inc. for adding interactive, motion-based content to Web sites.

Navigator will also ship with a scripting language that Netscape Senior Product Manager Len Feldman called "Java Lite."

"Java, like C++, is fairly hard to master," Feldman said. "We wanted to come up with a simpler scripting language like VisualBasic that users can build applications with."

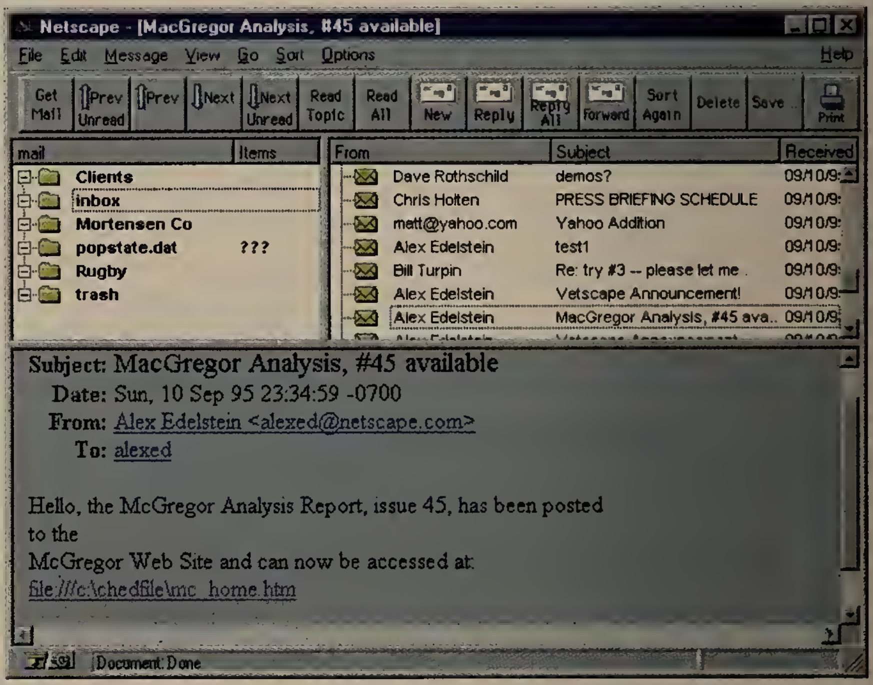
Also from Netscape's cornucopia this week will come Navigator Gold 2.0, which includes all the Navigator 2.0 encrypted electronic mail features plus an authoring tool that lets users create Web text and images in HTML or multimedia document types.

"Gold lets you publish files to any Netscape server," Feldman said.

Two more new products from Netscape — LiveWire and LiveWire Pro — are application development tools that encompass all the features of Gold, plus add a Site Manager that lets users create and manage Web sites.

Site Manager lets Web publishers create an Internet storefront, catalog pages or a chat area, and it can analyze pages and links, reorganizing them automatically, Feldman said.

LiveWire Pro includes LiveWire's Site Manager with an added capability that allows publishers to use SQL access database routines to connect Netscape Web sites to Informix, Inc., Oracle Corp., Sybase, Inc. and Microsoft Corp. databases. The tool overcomes a limitation in current Netscape servers — the lack of direct database access. ■



From	Subject	Received
Dave Rothschild	demos?	09/10/9:
Chris Holten	PRESS BRIEFING SCHEDULE	09/10/9:
matt@yahoo.com	Yahoo Addition	09/10/9:
Alex Edelstein	test1	09/10/9:
Bill Turpin	Re: try #3 -- please let me .	09/10/9:
Alex Edelstein	Vetscape Announcement!	09/10/9:
Alex Edelstein	MacGregor Analysis, #45 ava..	09/10/9:

Subject: MacGregor Analysis, #45 available
Date: Sun, 10 Sep 95 23:34:59 -0700
From: Alex Edelstein <alexed@netscape.com>
To: alexed

Hello, the McGregor Analysis Report, issue 45, has been posted
to the
McGregor Web Site and can now be accessed at:
file:///c:\chedfile\mc_home.htm

Navigator 2.0 *lets users download multimedia files from the Web through MIME mail.*

InterCon, NaviSoft boost profiles on the Web browser landscape

When it comes to sheer numbers, Netscape Communications Corp. may be the king of the World-Wide Web, but companies such as InterCon Systems Corp. and NaviSoft, Inc. are angling to take the throne.

InterCon this week began shipping NetShark, a Web browser with integrated multimedia Multipurpose Internet Mail Extensions electronic mail. The firm is taking a clear poke at Netscape, whose next-generation Navigator will handle multimedia document types like Adobe Portable Document Format.

While NetShark will butt up against Netscape Navigator 2.0 in its support for Adobe PDF, GIF, Apple Quicktime and other document types, NetShark falls short in its lack of support for Macromedia Directory File and Sun Microsystems, Inc. Java, analysts said.

"NetShark has a good client user interface, but it's not yet supporting Java," noted Steve Franco, an analyst at The Yankee Group consultancy in Boston.

Following Netscape's strategy, InterCon intends to build its business by initially giving away software and then selling the more full-featured commercial version.

InterCon will offer NetShark free from its Web site, while the retail version will sell for $39.95 in stores next month, said David Salwen, InterCon director of operations.

Last week, InterCon also began shipping a Macintosh-based Internet server, filling an important gap left by Netscape and other vendors. Called InterServer Publisher, the Macintosh Web server will initially cost $495, increasing to $795 in October.

NaviSoft, which had outflanked Netscape in publishing and Web management tools, now finds Netscape on the attack with Navigator Gold 2.0 and the LiveWire suite. Fighting back, NaviSoft last week emphasized its commitment to support multimedia document types in its NaviPress authoring tool by joining with Macromedia, Inc. to support its Director files.

✆InterCon: (703) 709-5500; NaviSoft: (703) 448-8700.

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Mobile computing

First PCS offerings arrive from SkyTel

By Joanie Wexler

Orlando

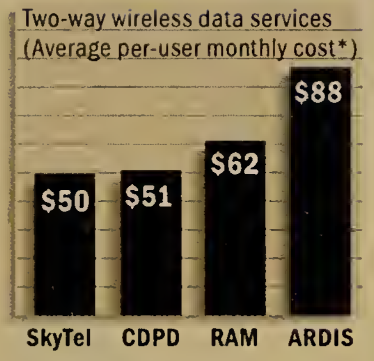
A new competitive era in two-way wireless messaging and data transfer will dawn tomorrow with the launch of the industry's first commercial personal communications service (PCS) at the PCS '95 show here.

SkyTel Corp. will offer up two-way paging, which falls into the general service category known as narrowband PCS. The company said it will have service available in about 40 markets this week and in a total of 300 by year-end.

Separately, software developer Ex Machina, Inc. will introduce a new generation of mobile applications and tools designed for narrowband PCS services, such as SkyTel's SkyTel 2-Way offering.

Bottom-line battle

Figure 1



*Includes cost of user device amortized over three years and assumes 100 five-character messages per month. The CDPD figure is an average cost among multiple vendors.

SOURCE: GARTNER GROUP, SANTA CLARA, CALIF.

The SkyTel service will give message recipients carrying a two-way pager the ability to reply with short, preprogrammed messages. They will also be able to compose text messages on a Hewlett-Packard Co. palmtop computer linked to a paging device and, in about six months, will gain the ability to connect a laptop to that paging device.

The service also verifies to the sender that a page was received and when. This has been a long-awaited productivity-enhancer for mobile workforces tired of sending pages into a black hole but not willing to foot the bill for full-fledged two-way messaging services and devices that have much shorter battery lives than pagers.

SkyTel 2-Way and other PCS services — the progeny of the federal narrowband PCS spectrum auctions that took place last year — compete on a certain level with offerings from ARDIS Co., RAM Mobile Data and fledgling Cellular Digital Packet Data (CDPD) net operators.

The new competition should help drive down service prices, but it will further muddy the already cloudy network service waters.

"The poor users out there are going to get fried" by all the choices, said Ken Dulaney, vice president of mobile computing at consultancy Gartner Group, Inc.'s office in Santa Clara, Calif. "There are so many pricing variables, users might just go with whatever vendor walks in the door."

The SkyTel 2-Way service calls for a $400 pager with 100K bytes of memory. Basic airtime service charges will begin at about $25 per month, which compares to about $9.95 a month for one-way numeric paging and $19.95 for one-way alpha paging.

SkyTel's offering will also be priced favorably compared with those from ARDIS and RAM, and competitively with CDPD (see Figure 1).

Competing services

Two-way paging networks that will also handle store-and-forward voice, such as forthcoming services from Paging Network, Inc., might have a leg up on RAM and ARDIS, too. There are some users that want to buy voice and data services from one provider.

Larry Finney, systems director at Sears Repair Service in Hoffman Estates, Ill., for example, is a longtime ARDIS user who has been trying to talk the carrier into providing him with bundled voice and data. Rob Euler, ARDIS' senior vice president, said his company has no plans to support voice on its network per se, but that it would consider reselling cellular or PCS voice services if demand warranted and if devices emerged supporting voice and data.

Ready, set...

Figure 2

Annual U.S. PCS service revenue

1996	$42m
1997	$211m
1998	$763m
1999	$1.6b
2000	$2.7b
2006	$8.9b

Though PCS networks and services will generally take awhile to arrive, their growth should cause the price of cellular services to plummet.

SOURCE: BIS STRATEGIC DECISIONS, NORWELL, MASS

New applications

The PCS market will also get a boost from Ex Machina. The company will announce here that its Notify Pro and Notify Mobile text messaging and data file transfer applications comply with the Telocator Data Protocol narrowband PCS standard, said Ex Machina President David Rose.

The software also accesses filtered or unfiltered Ex Machina-provided news services.

In addition, the company will offer AirMedia Solutions, software that lets users extend applications to work across wireless links, and AirMedia Consulting, software for integrating different wired and wireless networks so users can gateway among them.

©Ex Machina: (212) 843-0000; SkyTel: (408) 451-3990.

Verilink offers a flexible T-1 backup plan

By Tim Greene

San Jose, Calif.

Most users today back up a T-1 line with a whole other line. Verilink Corp. believes that is a waste of money and, as an alternative, will announce this week a way to back up multiple T-1s with a single line.

The system, aimed mostly at noncritical applications, can also use the backup T-1 for low-priority traffic, at least until it is needed to recover a higher priority dropped line.

The Automatic Protection Switch 2000 (APS2000), an enhancement to the T-1 access cards for Verilink's Access System 2000 (AS2000) data service units/channel service units (DSU/CSU) family, will be displayed next week for the first time at NetWorld+Interop in Atlanta.

With APS2000, "A single spare T-1 can provide protection for virtually any number of working lines," said Steve Taylor, chief technical officer at Verilink here.

Backup ranges

The APS2000 lets the user set different levels of backup for each working T-1, depending on how critical the traffic is, he said.

For example, a node terminating 30 T-1s could be configured to provide one-for-one protection for the most critical T-1, a one-for-six protection for a group of lesser priority T-1s and one-for-20 protection for the remaining lines.

Rather than sitting idle waiting for a disaster, the backup T-1s can be used to carry low-priority data until they are needed to back up a downed line carrying more-critical data.

For the user that already has an AS2000 platform, the T-I backup is a low-cost solution, according to Maribel Howard, an analyst with International Data Corp. in Framingham, Mass.

She said this is the only such scalable backup she has seen that is aimed at users.

Previous devices that could perform the same function were stand-alone and expensive, according to Howard. "This is affordable for the end user," she added.

This type of equipment might have been available previously for carriers, but this is scaled for users running mission-critical applications over multiple T-1 lines, she said.

The software upgrade is for the current Verilink intelligent CSU module called the T-1 access card. With other software, the same card can be used as an intelligent CSU or a T-1 test set.

The APS2000 modules will be available in the fourth quarter of this year and will cost $395 per T-1 port.

©Verilink: (408) 945-1199.

Cisco broadens remote access performance in its product line

New mid-range and low-end routers feature assorted LAN and WAN links, as well as a faster CPUs and more memory.

By Jim Duffy

San Jose, Calif.

Cisco Systems, Inc. last week expanded its remote access portfolio and users' connectivity options with a new mid-range router and two additions to its low-end router line.

As expected, Cisco rolled out the Model 4700, an upgrade of the company's 4500 mid-range device that features a faster CPU and more memory (*NW*, Sept. 11, page 5).

The new router's 133-MHz CPU and 512K-byte secondary cache memory module allow the device to perform up to 75% faster than the 4500 for moving IBM and ATM traffic, according to Dan Skaalerud, Cisco product marketing manager for the 4000 series.

The 4700 gives Cisco one more weapon to stave off competitors IBM, Motorola, Inc., Bay Networks, Inc. and 3Com Corp. in the LAN-to-LAN internetworking battle, said Kitty Weldon, senior analyst at The Yankee Group in Boston.

Like the 4500, the 4700 features three slots for LAN and WAN interface modules, including Ethernet, token-ring, Fiber Distributed Data Interface, 155M bit/sec ATM, serial, and ISDN Basic and Primary Rate Interface. The router is priced from $10,200 to $11,700 and is available now.

At the low end, Cisco extended the WAN options of its 1000 line with two new models.

The 1004 router sports one LAN and one ISDN BRI link. The router's integrated Network Termination 1 (NT1) reduces the number of devices needed to connect to North American ISDN services. Cisco's existing 1003 supports an ISDN BRI link but must be used with an external NTI device.

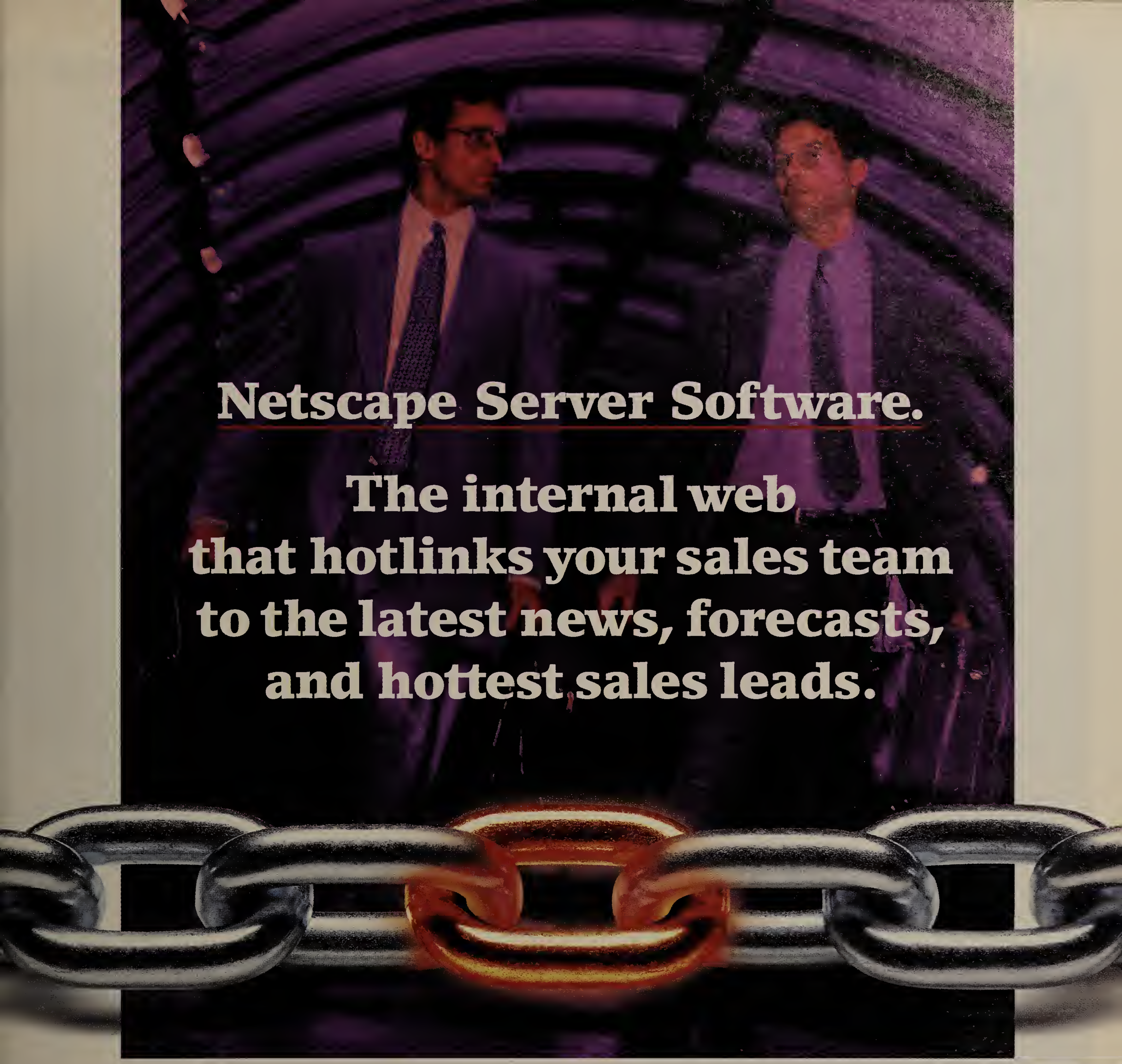
The 1004 costs $1,595 for IP routing and $1,795 for IP, IPX and AppleTalk routing. It is available now.

The 1005 has one Ethernet and one synchronous T-1/E-1 serial port for connection to leased lines, frame relay, SMDS, switched 56K bit/sec and X.25 services. Pricing starts at $1,395. It will be available in December.

©Cisco: (408) 526-4000.

WINNER'S CIRCLE

Cisco's 4700 bested 3Com's NetBuilder II and IBM's 6611 and 2211 routers in the latest Tolly Group tests on large-scale Data Link Switching network performance. For more information, contact the Tolly Group's Web site at http://www.tolly.com.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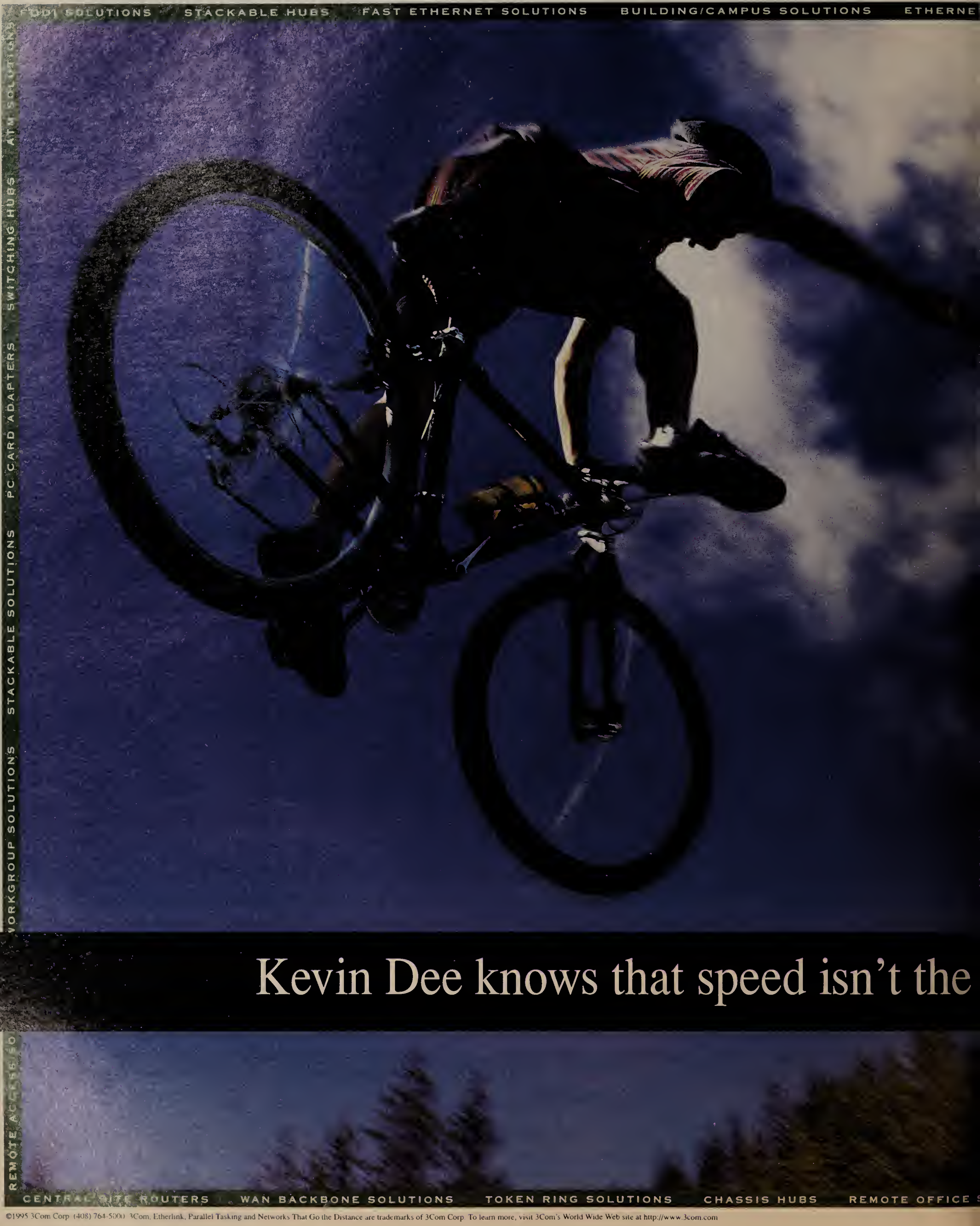

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NETWORKS THAT GO THE DISTANCE

Madge maps out ATM product plans

By Jodi Cohen

San Jose, Calif.

Madge Networks, Inc., along with acquisition target LANNET Data Communications, Ltd., last week detailed plans to ease the migration from legacy LANs to Asynchronous Transfer Mode nets.

Madge Networks plans to offer products that support the integration of ATM technology into both the workgroup and LAN backbone.

Token-ring vendor Madge Networks, which aired plans to acquire Ethernet switch player LANNET in July, announced five new ATM switches along with PCI adapters under the new Collage product family.

In the workgroup, Madge Networks will offer the Collage 250 and 280 stackable switches. Each device offers 12 25M bit/sec ATM ports with an optional 155M bit/sec uplink. The two switches, which Madge Networks will resell from Whitetree Network Technologies, Inc., are identical with one exception: The Model 280's desktop ports are able to automatically adapt to switched Ethernet or ATM.

Madge Networks also will offer ATM access switches for existing Ethernet and token-ring LANs, based on its own silicon. The Collage 530 Ethernet device offers 16 switched 10Base-T ports and one 155M bit/sec ATM backbone or server connection. The Collage 540 token-ring switch provides 10 switched token-ring ports and one 155M bit/sec ATM uplink.

Madge Networks will round out its ATM offerings with the Collage 740 backbone switch, which provides as many as 20 155M bit/sec ATM ports with an optional 622M bit/sec ATM uplink. The device can be used for building and campus backbone environments as well as high-performance server farms and power-users.

One analyst likes Madge's approach to virtual LANs.

"Madge is working on management tools in order to create useful VLANs that reflect application traffic patterns," said Mary Petrosky, an analyst at The Burton Group, a consultancy in Salt Lake City.

One of the company's Ethernet switch users is anxious to deploy the ATM switches in order to carry bandwidth-intensive video applications across the wide-area to his 43 sites.

"Madge's ATM products will give us a way to integrate our wide-area cloud with the LAN switching hubs and retain a switched environment without having to jump to some kind of shared topology," said Michael Droe, director of networks and computer services at Hacienda La Puente Unified School District in City of Industry, Calif.

Pricing for the ATM switches has not been set, and the first Collage products will be available in the fourth quarter.

©Madge Networks: (408) 955-0700; LANNET: (714) 752-6638.

Madge makes ATM move

Product	Description	Availability
Collage 250 Workgroup ATM Switch	Stackable switch with 12 25M bit/sec ATM ports and an optional 155M bit/sec uplink.	Q1 1996
Collage 280 Workgroup ATM Switch	Same configuration as 250 model, but autosenses between switched Ethernet and ATM on each port.	Q4 1995
Collage 530 Ethernet-to-ATM Access Switch	Stand-alone switch with 16 switched Ethernet ports and one 155M bit/sec ATM uplink. Also has an optional second 155M bit/sec ATM uplink.	Q2 1996
Collage 540 Token Ring-to-ATM Access Switch	Stand-alone switch with 10 switched token-ring ports and one 155M bit/sec ATM uplink. Also has an optional second 155M bit/sec ATM uplink.	Q2 1996
Collage 740 Backbone ATM Switch	Offers as many as 20 155M bit/sec ATM ports with an optional 622M bit/sec ATM uplink.	Q2 1996

No pricing information is available.

Proteon

Continued from page 6

and 2515 platforms — starts at $2,995 but can range up to $5,495. And those offerings only support two WAN links.

"We're seriously looking at replacing the Cisco [devices] that we have on our WAN, and we've been talking to Proteon," said Matthew Marsh, enterprise network analyst at Bergen Mercy Hospital in Omaha, Neb. The RBX 250's dual token-ring support is particularly appealing, he added.

Proteon also introduced its Globetrotter line of branch office routers, which are designed to provide Internet access, among other applications.

The Globetrotter 60 features one Ethernet and one synchronous T-1/E-1 link. It provides IP static route support and dynamic routing via the Router Information Protocol (RIP).

The Globetrotter 62 also supports one LAN and one T-1/E-1 WAN. But in addition to IP, the device can route IPX and AppleTalk data, as well as bridge other traffic.

The third member of the line, the Model 100, combines a four-port Ethernet repeater with a multiprotocol router. It sports two WAN links that support speeds up to T-1/E-1, and routes IP, IPX, DECnet Phase IV, AppleTalk and VINES traffic. Among the routing protocols supported are RIP, Open Shortest Path First (OSPF), Multicast OSPF and Border Gateway Protocol-4.

The Model 60 costs $795, while the Model 62 is priced at $995. Comparatively, the 1005 router announced by Cisco last week (see story, page 10) starts at $1,395. Both Proteon products will ship in November, with asynchronous and ISDN capabilities being added next year, according to sources.

Globetrotter 100 hardware costs $1,200, while hardware and software packages start at $1,795. It will ship in December.■

Unisys

Continued from page 1

But Exchange was repeatedly delayed (it's now scheduled to be ready by year-end), and Unisys couldn't afford to wait.

"It's too bad the product wasn't here earlier," said Tom Hahn, director of systems architecture and engineering at the Unisys Information Technology group. "It would have made our life a lot easier."

With no Exchange in sight, Unisys made do with the old. "Microsoft Mail is like most other [LAN] applications. They're designed for one department in one building on a LAN," said Gil Piddington, vice president of worldwide processing services at Unisys here. "They assume [the presence of] a high-speed, reliable LAN with a small population of PCs. They're not designed for a company of Unisys' size or for wide-area networks or antiquated telephone technology."

Microsoft Mail uses its shared-file system for the E-mail directory on each post office, which is a local mail server that handles local clients, according to Paul Palmer, senior technical analyst for Global Mail Management (GMM) group at Unisys' main data center in Eagan, Minn. Each post office has a mail transfer agent (MTA) that moves the mail between the local post office and the remote server.

Before long, Unisys had 190 MTAs trying to connect thousands of clients with the central server.

Palmer hit on the idea of playing to Microsoft Mail's strengths. "What we really did was we created a collection of very similar, LAN-like configurations and connected them via these things called local hubs," he said (see graphic).

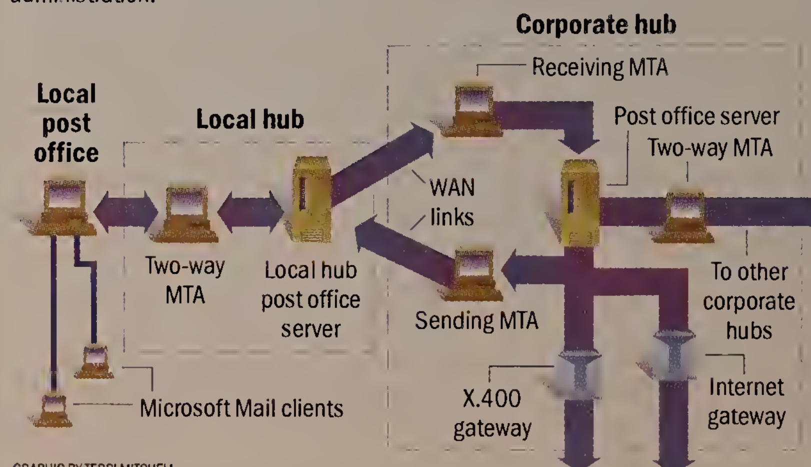
Post offices in a building or a campus now connect to a local hub, which serves all local E-mail traffic. The local hubs connect to one of five corporate hubs, which, in turn, connect to each other. Unisys also set up dedicated, one-way MTA servers at the boundaries between local and corporate hubs. At each level, the network appears and behaves as a well-designed LAN E-mail system. The beauty of this approach is that Unisys can — and does — simply copy these configurations as often as needed.

The Eagan-based corporate hub also handles connections to an X.400 gateway and an Internet (Simple Mail Transfer Protocol) gateway, which link Unisys users with external mail systems.

Luckily, the new architecture solved the delays and performance problems. In fact, there are now more than 21,000 Microsoft Mail users, with 27,500 planned by year-end, and about 325 servers, with 400 the target.

TURNING LAN E-MAIL LOOSE ON THE ENTERPRISE

Unisys designed a multitiered Microsoft Mail architecture with dedicated servers to prevent the 27,000-user system from getting bogged down. The arrival of the Exchange server around year-end should help Unisys consolidate servers and simplify administration.



GRAPHIC BY TERRI MITCHELL

And traffic is heavy; a test last summer found that nearly 120,000 messages per week, or about 3.2G bytes of data, were being sent just among the mail servers in the five corporate hubs.

The overall network is administered by the six-member staff of the GMM group, which also handles the weekly synchronization of the corporate mail directories.

GMM uses MailCheck, a monitoring tool from Baranof Software, Inc. in Watertown, Mass. And local post office administrators, who typically are also the local NetWare LAN administrators, have some Microsoft Mail utilities.

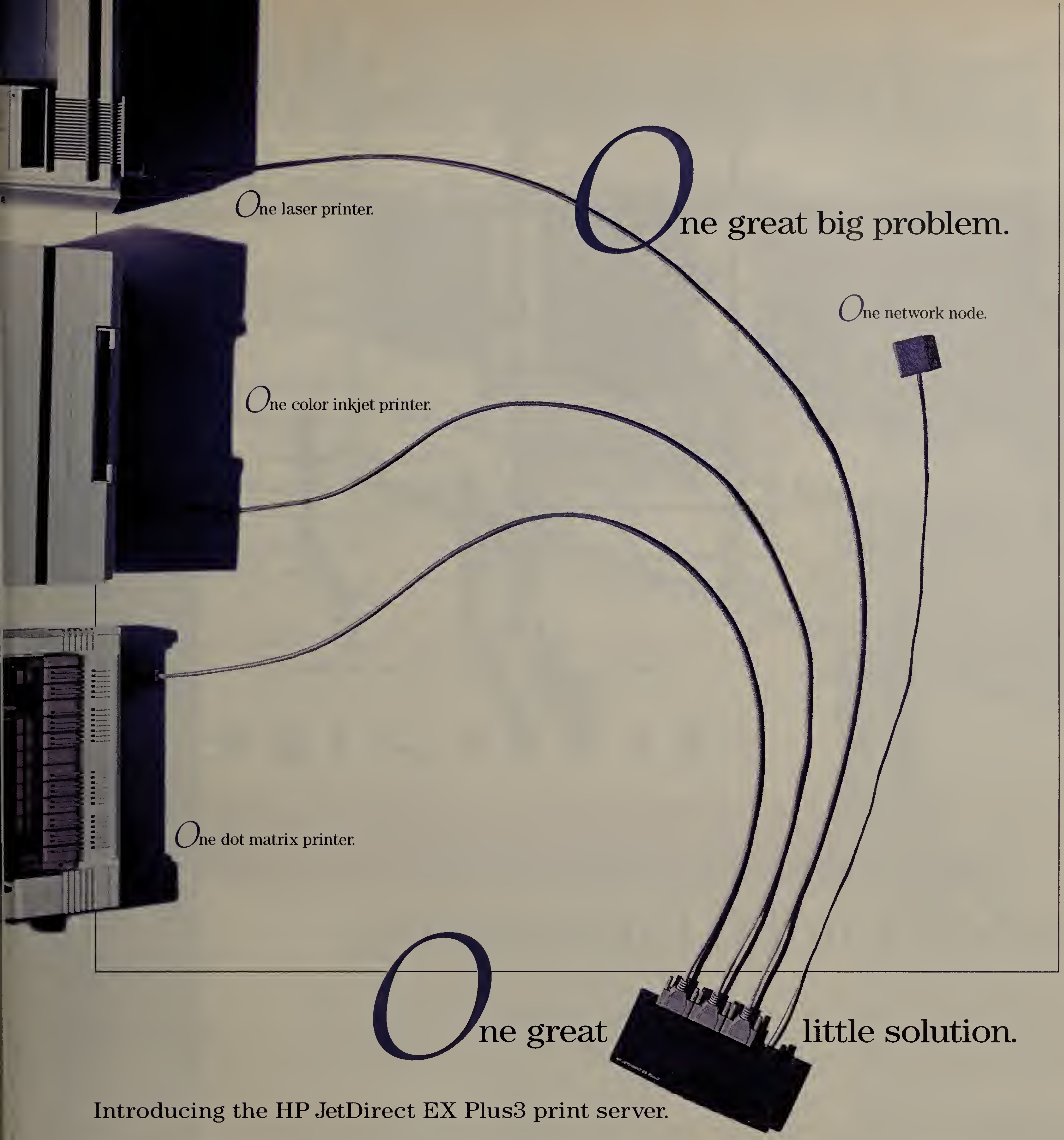
"There are not a lot of tools available from anyone for monitoring and investigating activities in a network as large or as complex as ours," Palmer said.

Among other things, the network lets users access a growing repository of standard corporate forms — everything from business card order forms to equipment tags — which are now created in Microsoft Word. Copies of the master form can be downloaded via E-mail to local servers and then either printed out or filled out on screen and routed, via mail distribution lists, to a sequence of users for approval, said Jacqueline Muzina, senior analyst with the Unisys corporate forms management group.

This system has already cut overnight delivery charges, postage fees, mail-handling costs and photocopying demands.

Those benefits are being multiplied enterprisewide, according to Piddington. "Electronic mail is viewed by most people at Unisys as a mission-critical application," he said.

Microsoft Mail was Unisys' first global client/server application and the catalyst to introduce LANs to 35,000 Unisys employees in 66 countries. To achieve this, the company was scrapping a hodgepodge of more than a dozen E-mail systems, including its own widely used host-based product, in favor of a global Microsoft Mail network.■



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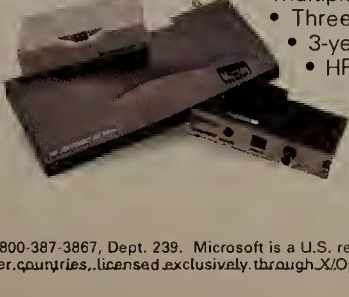

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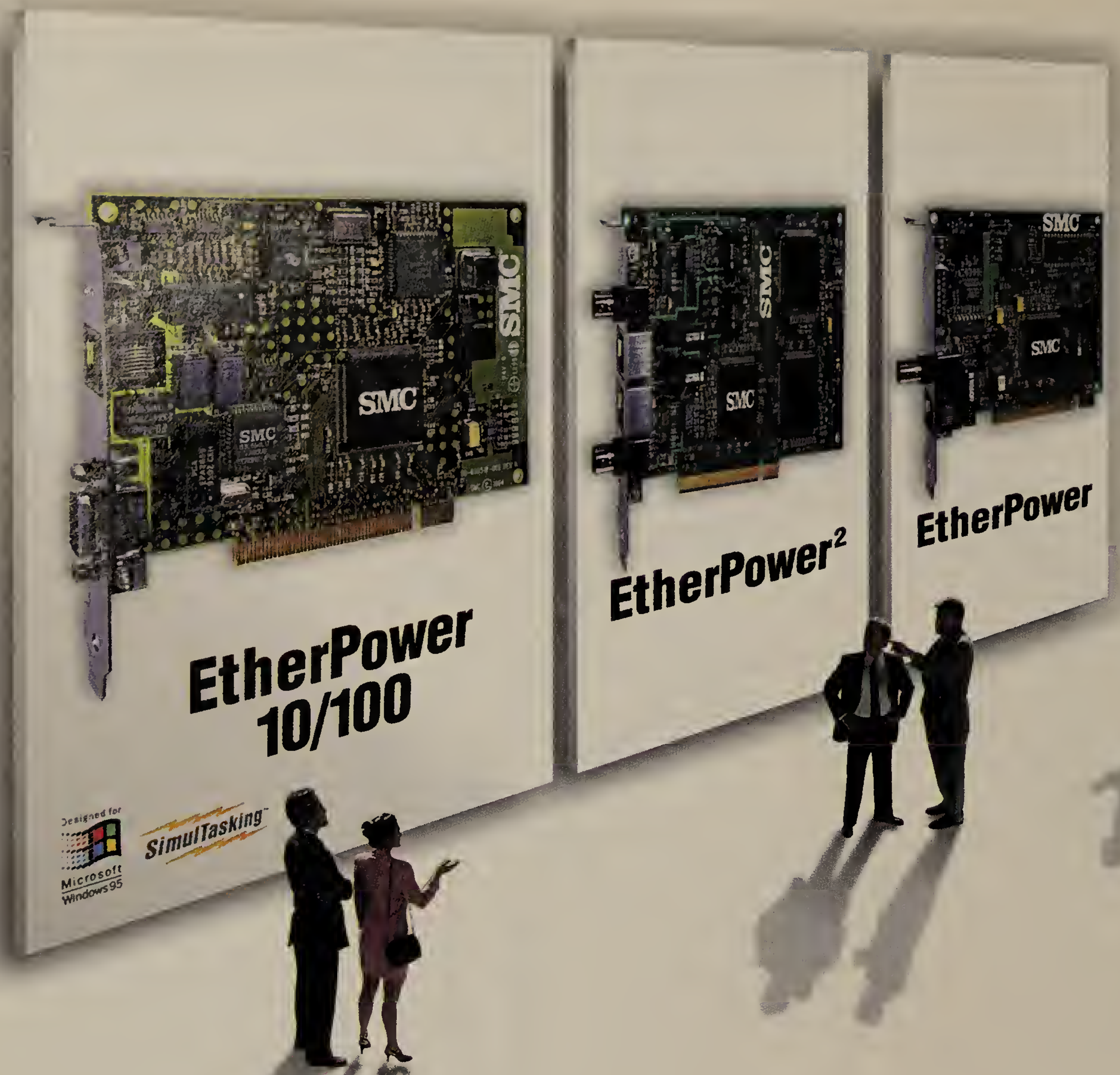

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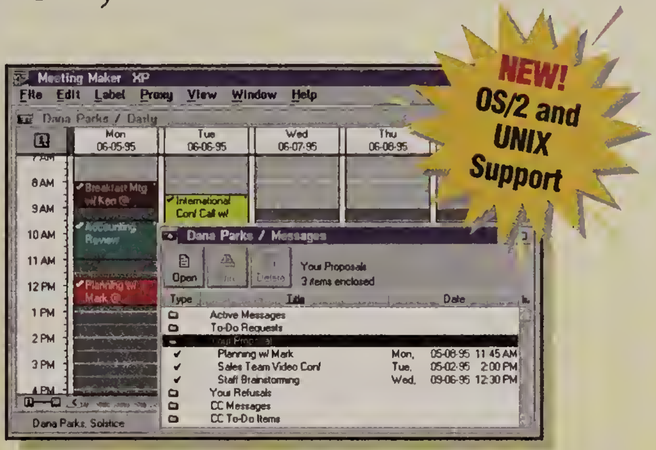

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3 items enclosed

Active Messages
To-Do Requests
Your Proposals
✓ Planning w/ Mark Mon, 05-08-95 11:45 AM
✓ Sales Team Video Conf Tue, 05-02-95 2:00 PM
✓ Staff Brainstorming Wed, 09-06-95 12:30 PM
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6. If yes, what LAN Group scheduler are you using?

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8. If yes, what E-mail package are you using?

9. Our company is: ☐ End User ☐ Reseller

10. Number of Users *(fill in numbers)*: DOS only: ___ Windows: ___ Windows/NT: O/S 2: Mac: Unix:

11. Number of Servers:

12. What type of Network do you have? ☐ AppleTalk ☐ NetBios ☐ LAN Manager ☐ Windows NT ☐ Novell ☐ Banyan ☐ Other

13. Do you own NetWare MHS? ☐ Yes ☐ No

14. Do you have a CD ROM Drive? ☐ Yes ☐ No

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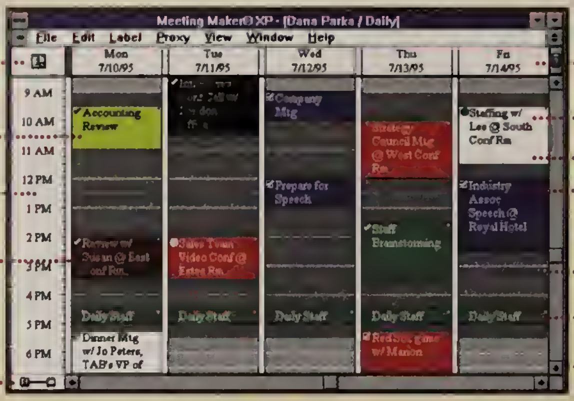
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Briefs

■ **Landmark Systems Corp.** *has announced a new version of its server* **performance monitoring software** *that works with leading Simple Network Management Protocol consoles and a performance management package for Sybase, Inc. databases. Version 3.1 of The Monitor for Unix allows systems administrators to capture and view server performance alerts on SNMP-compliant management systems from Hewlett-Packard Co., IBM, SunSoft, Inc. and Tivoli Systems, Inc.*

The Monitor for Unix 3.1 costs $5,000 for the management station software and $1,750 for each server agent. Both products are available now.

Landmark: (703) 902-8000.

■ **AT&T** *last week launched AT&T Billing Edge Desktop Analysis Software for 800 Services, giving a broader range of users* **monthly billing information** *about CD-ROM with a Windows interface. Billing Edge was previously available to Software-Defined Network and Tariff 12 customers, as well as certain 800 users who combined their inbound calling with SDN in a billing plan known as OneNet.*

■ **Microsoft Corp.** *last week announced its Windows 95 client software for its* **SNA Server** *product. The 32-bit software links Windows 95 users to IBM midrange and mainframe resources. The Windows 95 client for SNA Server is available as a free upgrade for SNA Server users.*

■ **Newbridge Networks, Inc.** *will announce at NetWorld+Interop that its largest ATM backbone switch, the 36170 Mainstreet ATMnet, will also support* **frame relay.** *Having a single platform within a carrier network could translate to user savings by supporting the same customer premises equipment for both frame relay and ATM, allowing a lower cost migration path, said analysts.*

NETWORLD+INTEROP
PREVIEW

Sprint offers price protection on resale

By David Rohde
Washington, D.C.

Sprint Corp. soon will unveil a program designed to isolate its resellers and their end-user customers from repeated price hikes and changes in terms that have recently characterized major carrier tariffs.

The new program, dubbed Resale Solutions, for the first time spells out the specific terms under which resellers can purchase Sprint services at wholesale prices.

Currently, Sprint resellers are presented with the equivalent of AT&T contract tariffs. Under this system, a discount on regular prices is provided, but there is also an increase in the regular tariff, which causes the contract price to rise. This typically forces resellers to pass on the increase to end users. Under Resale Solutions, which is due to take effect Sept. 29, resellers are offered a set price that is not tied to other offerings.

Although ultimately marked up for resale to end users, the Resale Solutions wholesale prices recently filed at the Federal Communications Commission are among the lowest offered in the industry (see graphic).

The package of services under Resale Solutions offer billing in 6-second increments.

In recent months, the major carriers have changed from 6-second increments to 18-second increments on many of their services, in effect raising the price of switched voice and data connections.

"There's a 'follow me' approach on the retail side," said Brian Newby, manager of business strategy and support for Sprint's reseller unit, known as Diversified Brands. "If AT&T switched the billing increments, Sprint and MCI tended to do the same thing."

The change in billing increments irritated resellers, who — along with second-tier interexchange carriers such as LCI International, Inc. — offer short billing increments as an inducement to users.

In addition, Resale Solutions should shorten the period of time Sprint spends negotiating with resellers, according to Newby. "It's easier and faster than negotiating over five pages of terms," he said.

Resale Solutions is a package of services and rates that vary according to how the reseller is connected to the Sprint net.

Resale Direct and Resale Direct Toll-Free are primarily for facilities-based resellers — those who own switches but need to connect to a major carrier to terminate calls across the country — who use dedicated access.

Resale Connect One Plus and several similar services are for switchless resellers, which are essentially marketing organizations that do not own their own facilities.

The wholesale price for Resale Connect One Plus is higher than that for Resale Direct, but Newby cautioned end users that the cost structure for most resellers tends to be similar, since the lower wholesale price of a service such as Resale Direct is offset by the higher cost of installing and maintaining switches.

In addition, users who buy Sprint services through resellers

See **Resale,** *page 23*

Good-looking deal?

Sprint's planned Resale Solutions family of services includes the following business day rate options:

Service	Class of service	Rates per minute
Resale Direct	Outbound with dedicated access	6.9-12.1 cents
Resale Direct Toll-Free	Inbound with dedicated access	9.8-13.8 cents

Note: Rates vary within the given ranges according to distance.

Itronix builds wireless laptop from ground up

By Joanie Wexler
Spokane, Wash.

The race to build the do-it-all mobile device is officially on.

First, Air Communications, Inc. launched a wireless phone/fax/data device (*NW,* Sept. 4, page 6). Now Itronix Corp. has announced the industry's first communications-ready, ruggedized laptop computer with a wireless radio built in. For flexibility, the radio is removable, should the customer decide to change network services.

The 486-based X-C 6000 Cross Country will ship next month with the user's choice of an integrated modem from Motorola, Inc. that interfaces to either the ARDIS Co. or RAM Mobile Data network. In January, the notebook will gain a circuit-switched/Cellular Digital Packet Data (CDPD) modem option,

See **Itronix,** *page 21*

Laptop nirvana?

X-C 6000 Cross Country features:

- Keyboard 93% the size of a standard PC's
- Choice of integrated RAM or ARDIS radio, which can be swapped out if user wants to change nets
- Built-in 14.4K bit/sec fax/modem, upgradable to 28.8K bit/sec
- Integrated speakerphone, wired connection
- 1 PCMCIA slot (Type II or III)
- Weight of 6.3 pounds (with hard drive)

Coming in January:

- Cellular/CDPD modem
- Pen input
- Cellular speakerphone connection

IBM eases SNA-TCP/IP integration

By Michael Cooney
Raleigh, N.C.

Aiming to help users more easily meld Systems Network Architecture and TCP/IP networks, IBM last week announced what it claimed is a more powerful and tightly integrated version of its Unix-to-SNA server platform.

The new SNA Server for AIX 3.1 can now run on IBM's AIX 4.1 operating system, meaning it can take advantage of new symmetric multiprocessing (SMP) PowerParallel-based RISC System/6000 servers — giving the platform close to triple the performance of a single processor system. SNA Server 3.1 also integrates IBM's SNA Gateway/6000 and AnyNet feature packages, which were previously priced separately at about $1,000 to $2,000.

AnyNet is IBM software that lets applications communicate over any underlying transport protocol.

Analysts said the ability to run the SNA Server for AIX on IBM's SMP processors will let the platform better handle larger volumes of enterprisewide transactions — volumes many Unix-based servers fail to handle.

The integration of the gateway and AnyNet functions was long overdue, experts noted. AnyNet never sold as a standalone feature, and the gateway function was really an integral part of SNA Server. As a result, pricing it separately was annoying to users.

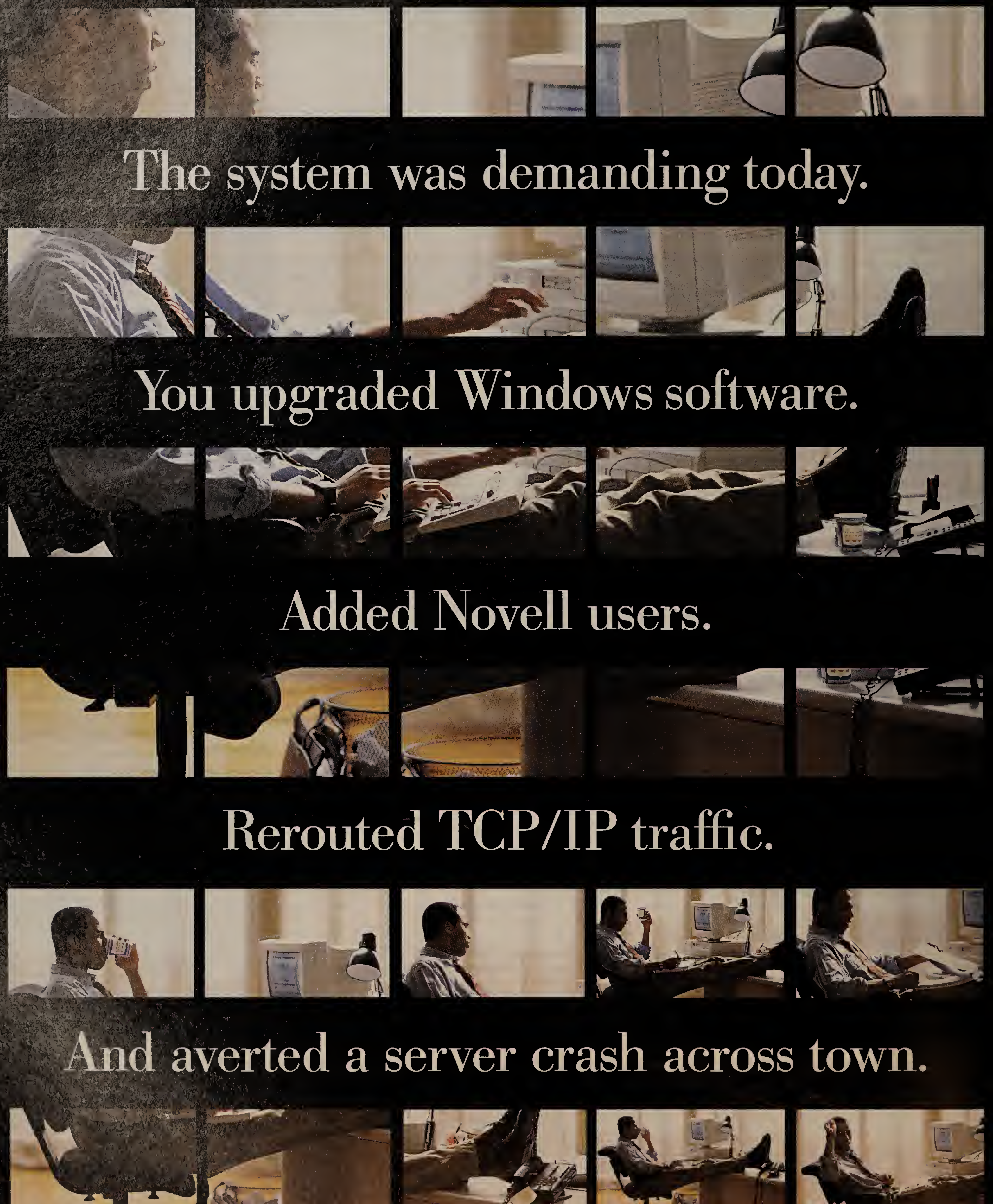
"IBM wants to make it as easy as possible for TCP/IP users to be part of enterprise networks, so it is eliminating the reasons users might look elsewhere," explained Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington, D.C.

IBM's Dana Boudreau, product manager for SNA Server for AIX, agreed. "With this version of SNA Server, we are trying to simplify the package and make it easier for users to build larger, more tightly integrated SNA and TCP/IP environments," he said.

While SNA Server 3.1 will run on single-processor based RS/6000s, by running it on the SMP-based boxes, users will be able to scale the systems to support thousands of users. Plus, should one of the processors fail in an SMP system, another will automatically take over.

"We've seen 25% better throughput with the traffic flowing through the SMP-based SNA Server," Boudreau claimed.

See **Integration,** *page 23*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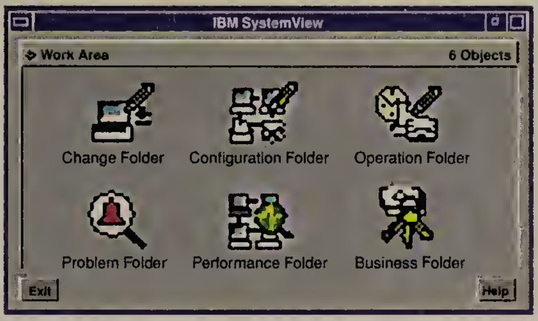

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*Percentage of TCP packets not requiring retransmission

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ADC Kentrox device reassigns ATM voice channels for data

By Tim Greene

Portland, Ore.

ADC Kentrox last week announced at NetWorld+Interop in Paris two ATM products that will support T-1 circuit emulation and allow DS0 voice virtual circuits to carry data when there is no voice traffic.

NETWORLD+INTEROP PREVIEW

That would make them the first such devices to comply with an ATM Forum-recommended AAL 1 standard that is scheduled to be considered during the forum's meeting at NetWorld+Interop in Atlanta next week.

Enhanced versions of the T-1 ATM Access Concentrator-1 (AAC-1) and T-3 ATM Access Concentrator-3 (AAC-3) are both expected to go into production by year-end.

Some Asynchronous Transfer Mode concentrators offer structured DS0 circuit emulation, but the circuits were dedicated. ADC Kentrox's AAC-1 and, eventually, its AAC-3 will be able to reassign the DS0 circuits for other traffic in the absence of voice, according to John Coons, an analyst at Dataquest, Inc. in San Jose, Calif.

The two concentrators will support the AAL 1 standard, which would set parameters for emulating the characteristics of a leased line over a constant-bit-rate ATM service.

Coons said that was particularly important for the T-1 product, the AAC-1. ATM networks based on T-1s must be able to send voice efficiently, as well as data, to compare favorably with generally less expensive frame relay services.

"You want to be as thrifty as possible with the PBX tie-line bandwidth," he said.

The enhancement to the AAC-1, which is already in production, is a new card that adds the channelized voice capabilities and will be available in October. It features two user-side ports and has a single T-1 or E-1 port on the wide-area side. The module costs $2,000.

The firm previously announced the AAC-3 ES, an eight-slot version with a maximum of 28 user ports, slated to go into production in October.

The new ACC-3 FS, a four-slot version with 12 ports, is to go into production in December.

Both can support wide-area rates from 64K to 155M bit/sec, plus physical interfaces for T-1/E-1, T-3/E-3, OC-3, V.35, High Speed Serial Interface and X.21.

Prices range from $10,000 to $60,000, depending on configuration.

The new smaller version of the AAC-3 costs $4,000 to $5,000 less than the eight-port version, according to Coons. That is important, he said, even though the cost of such equipment can be justified based on the expected longevity of ATM as a core technology. ■

ADC Kentrox's ATM access concentrators

Both the AAC-1 and AAC-3 can emulate DS0 voice channels that can be used for other applications in the absence of voice traffic.

	AAC-1 FT1 module	AAC-3 ES and FS
Network interface	T-1/E-1	T-1/E-1, T-3/E-3, OC-3, V.35, HSSI, X.21
Protocols	Frame relay, ATM DXI, SMDS DXI, HDLC, CBR	ATM UNI, FUNI and DXI; frame relay; SMDX SNI and DXI; HDLC; CBR
Price	$2,000	$10,000 to $60,000
Availability	October	December

Itronix

Continued from page 17

built by Pacific Communications Sciences, Inc., said Itronix President Steven Gevurtz.

Gevurtz described the device as a "mission-critical notebook computer." It earned that moniker because it has been designed to malfunction no more than once in five years and has shock absorption, allowing it to fall as far as a meter onto concrete with no side effects.

The notebook runs industry-standard processors and software so it can integrate with a corporation's overall computing and communications scheme.

Gevurtz said that building the computer from the ground up as a wireless device with heavy-duty shielding between the CPU and radio modem to reduce interference, as well as the device's antenna design, actually has expanded the wireless coverage that users are getting in some areas.

"I wouldn't be surprised if some customers could up their wireless coverage by a third," he said.

Covering all angles

Being able to swap the modem out for another is a piece of insurance wireless-shy users will probably relish, especially in this era of uncertainty as to which networks will continue to thrive, analysts said.

Most laptops today offer PC Card (formerly called PCMCIA cards) removable modem options, which are considered risky if proper testing between modem and computer does not take place. PC Card modems not specifically engineered for a particular device can cause interference with the computer's CPU, said Samuel May, senior analyst at The Yankee Group consultancy in Boston.

"You get less interference [with the integrated scheme] than with the PC Card solution," he said.

Based on industry-standard Intel Corp. processors and the Windows operating system, the X-C 6000 Cross Country is initially aimed at field service personnel and comes with a vehicle cradle and connections to onboard printers and other devices. And paint the industrial-looking magnesium gray case a leathery-looking brown and there is no reason the device wouldn't appeal to the gamut of mobile workers, from executives on down, said Larry Finney, systems director at Sears Repair Service in Hoffman Estates, Ill.

Finney's organization has committed to deploying 1,000 of the laptops this year and will outfit the rest of its 13,000-plus repair service staff with them during the next two years, he added.

Sears, a longtime user of the ARDIS net, is replacing IBM PC Radios, laptop-size mobile devices based on the old Intel 8086 processor. IBM has quit making the product, which, in its current form, "limits us to how much we can grow" with new applications, such as CD-ROM-based data, Finney said. ■

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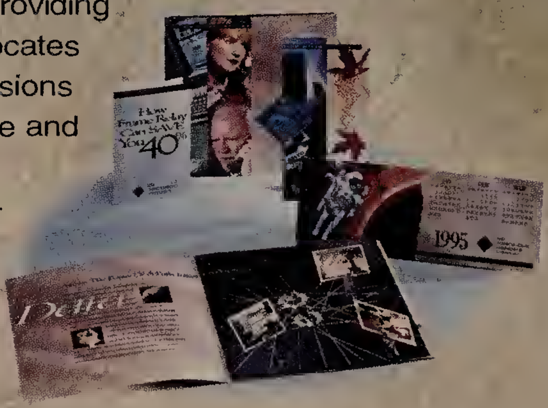

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INTERNETWORKING MONITOR

There is no success like failure

Back in the 1970s, TCP/IP was offered to ISO by a number of folks as a technology contribution, but it was turned down. The world of telecommunications might have been rather different if that effort had succeeded.

This train of thought was suggested by Tony Rutkowski, executive director of the Internet Society, in a note the other day. He wondered how important the basic nature of the IETF has been in producing the dynamic Internet we have today.

Clearly, as Rutkowski pointed out, any speculation on alternate futures is specious at best, but it also can be fun.

Scott Bradner

There is frequent criticism of the IETF — which helps guide TCP/IP standards for the Internet — by proponents of the traditional standards bodies. To them, the IETF is out of control, frequented by technonerds who don't even have specific voting during the standards evaluation process.

In addition, they feel that the IETF does not have any way to establish a specific membership, and the process is unfair because national standards bodies are not doing the evaluation.

All in all, the IETF sounds like rather a bad bunch; you wouldn't want your kid to hang out with them.

The traditional standards bodies see themselves as more rules-based and less likely to be subjected to the rantings of an individual. They are tied into the governmental standards acceptance mechanisms, plan before doing and, in general, are somehow more refined.

The kind of place someone might feel the need to wear a tie.

I expect that all of the above descriptions are right.

The ISO, for example, is a prodigious producer of standards. I've been told that on an average business day, there are six ISO working groups meeting somewhere. They produce standards on topics ranging from bolts to networks, and they have specific procedures in place to ensure fairness of process and technical competence of the resulting standards.

On the other hand, the IETF has about 70 working groups, most of which deal with defining network-based technologies for various applications. They also have specific procedures in place to ensure fairness of process and technical competence of the resulting standards.

So what is the real difference? To quote from the IETF's RFC 1726, "A major contributor to the Internet's success is the fact that there is no single, centralized point of control or promulgator of policy for the entire network. This allows individual constituents of the network to tailor their own networks, environments and policies to suit their own needs. The individual constituents must cooperate only to the degree necessary to ensure that they interoperate."

The authors call this "cooperative anarchy."

The basic networking standards promulgated by most traditional standards bodies assume that there is structure to the management of the underlying network. X.400 E-mail and X.500 directory standards are examples of this.

It is not clear what the effect of top-down management (for that is what standards like these assume) would have done to the Internet. But I do find it hard to believe we would have the explosive growth in usage and applications if we had relied on the innovative skills of the telephone companies to provide us with "what we need."

We may never have had all this Internet excitement if the TCP/IP offer to ISO had succeeded.

I'm glad it did not.

P.S. One trivia point goes to those readers who can identify the quote in the headline.

Disclaimer: Failure is not taught at Harvard, so any implications of the benefits of failure must be mine alone.

Bradner is a consultant with Harvard University's Office of Information Technology. He can be reached via the Internet at sob@harvard.edu. He shares this space with Daniel Briere and Christine Heckart, whose column will appear next week.

Integration

Continued from page 17

The package will run on other vendors' SMP processors, but users may not see the same performance improvements.

By integrating the SNA Gateway/6000 and AnyNet features inside the SNA Server 3.1 package, IBM did not change or enhance their functionality.

For example, the SNA Gateway/6000, which links TCP/IP-based workstations with IBM mainframes, still supports an unlimited amount of users, constrained only by memory.

IBM did add the Advanced Peer-to-Peer Networking Management Information Base (MIB) to the SNA Server 3.1 software, letting the SNA Servers in an APPN net be managed by any industry-standard Simple Network Management Protocol-based platform, such as IBM's NetView for AIX.

IBM also changed the pricing for SNA Server.

Previously based on processor size, there is currently a onetime charge of $849 for the SNA Server. The package is available this week.

©IBM: (800) 426-4968.

Resale

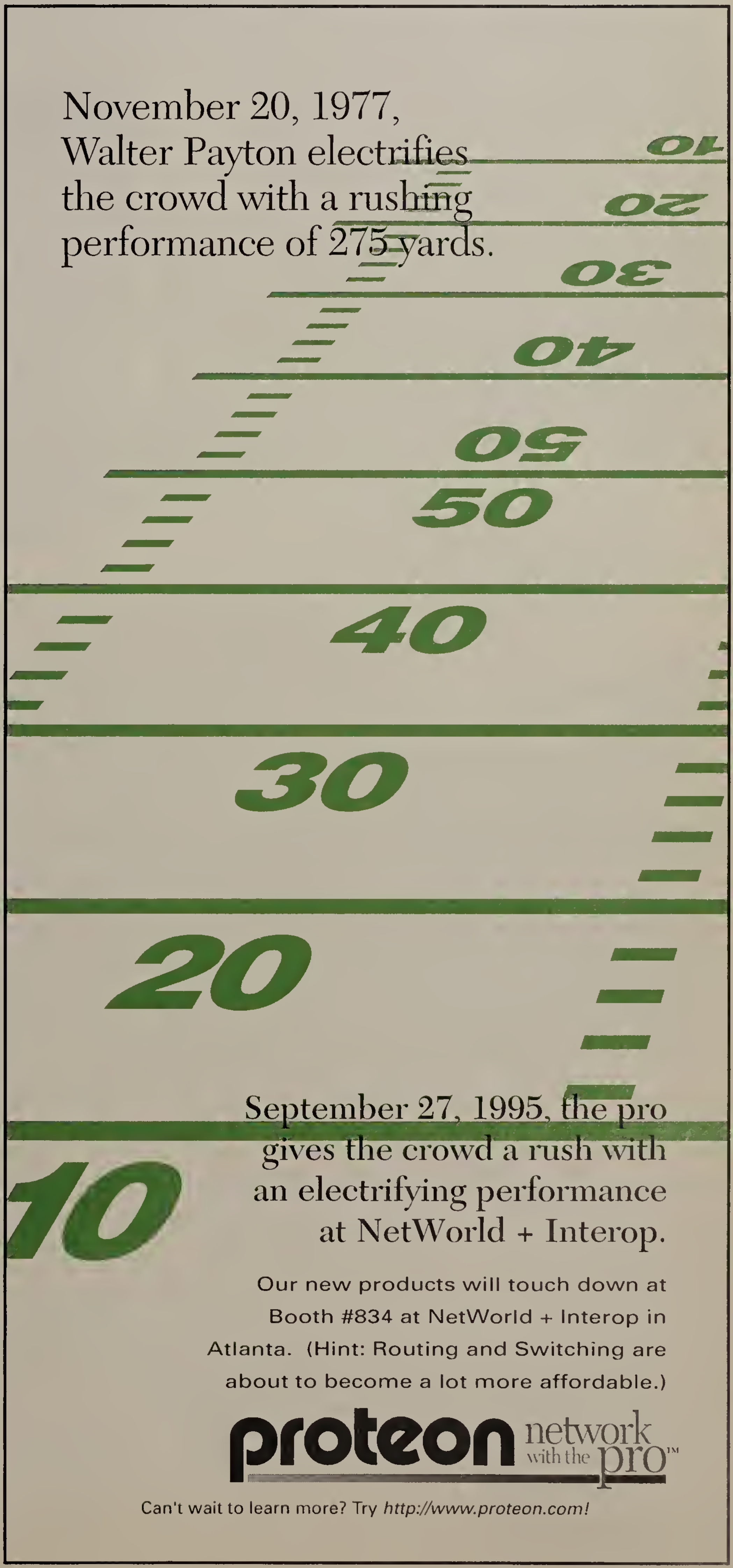
Continued from page 17

do not have recourse to Sprint for billing and service problems, since, technically, they are customers of the reseller.

Nevertheless, Sprint is offering certain additional services through the Resale Solutions program, such as CPE Fraud Detection service under which Sprint's security operation maintains on-line connections with customer premises equipment to detect unusual and possibly fraudulent calling patterns.

In the meantime, the nation's largest reseller — Seattle-based Midcom Communications, Inc. — is planning to unveil a new service next month under which users can obtain digital dedicated access to the long-distance network without having to commit to a T-1 access pipe.

The new service, called Midcom Direct Connect Advantage, will offer from one to eight dedicated DS0, or 64K bit/sec, access circuits. ■



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Those #$(&%*!% area codes

A net manager's survival guide to maintaining connections when those strange codes arrive.

By David Rohde

Last week, BellSouth Corp. ran a big ad in *The Wall Street Journal* alerting readers to eastern Tennessee's unusual new 423 area code and advising businesses to update their stationery, business cards and advertising materials.

Don't believe everything you read.

Users in other parts of the country who've lived through these new-style area codes say BellSouth's advice is the worst thing users can do, unless it's accompanied by a number of other actions.

As smooth as BellSouth's ad makes the process sound, inevitably, some callers to eastern Tennessee will not get through to the 423 area code. Users may have no idea why the new phone numbers don't work and won't realize that they may have alternatives to the simple phone company advice.

Some day soon, your own facility — or one for which you manage network communications — is going to receive one of those funny area codes in which the second digit is neither a 0 nor a 1. These have already bedeviled folks in Alabama, Arizona and Washington, for example.

> **"US WEST failed to fulfill its responsibility to Arizona customers during 1993 and 1994, when it was obvious that a shortage of telephone numbers was developing rapidly."**
>
> *Gary Yaquinto, director of the Utilities Division for the Arizona Corporation Commission*

And while there are actions you can take to avoid problems ahead of time, they all cost money. As a result, network administrators should be prepared to negotiate with their carriers for solutions.

"You're talking about a commercial situation, and their customers have a problem," said Bruce Thatcher, president of Tel-Con Associates, Inc., a telecommunications consulting firm in Overland, Kan. "It is entirely reasonable for the customer to go to the supplier and say, 'I have a problem, and you're part of it.' "

The area code problem is about to mushroom across the country as phone companies race to assign new area codes to regions with spiraling demand for cellular phones, fax machines and pagers, as well as regular phone lines (see graphic).

Typically, the existing area code is split in two, with half the numbers — generally those outside a central city area — getting a so-called relief code. One code is in the traditional format in which the second digit is a 0 or 1, while the relief code is in a new format in which the second digit is any number from 2 through 9.

Largely because many private branch exchange systems cannot recognize the new-style code without a software upgrade, some calls are not getting through. This has already resulted in lawsuits and filings at the state and federal levels (*NW,* May 15, page 6, and May 22, page 21). The problem becomes most acute when the period in which either area code can be used — called the permissive dialing period — expires.

While most of the focus has been on what calling parties can do to reprogram their PBXs, the reality is that at least half the premises switches have not been upgraded, insiders estimate. So affected parties in the new area codes will have to stay on guard.

The first rule of thumb for them is: Don't just follow the typical phone company instruction to inform all potential callers to start dialing the new number, then leave it at that. Experts agree that while it was good advice during the many area code introductions of the early 1990s, it is now probably the worst thing you can do.

The problem is that some callers will be unable to complete calls to the new number. After all, the same thing occurred when permissive dialing period ended for new area codes that still used the old format with a 0 or 1 in the middle. But at least in those cases, the misdialed number would typically trigger an announcement reminding the caller of the new area code.

By contrast, with the new-style area codes, the public network is frequently unable to tell callers the reason for the failure to complete the call, leaving them in the dark.

Some callers will get a fast busy signal. Others will get a faint static noise followed by a disconnect or hear a generic announcement stating the call cannot be completed. And depending on local conventions for dialing nearby regions, the network may even jump to wrong conclusions after the first seven digits are dialed and attempt to connect to a party defined by those digits. A call to a Tucson, Ariz., number such as (520) 555-1234 may result in a phone ringing at the local number 520-5551.

Don't charge us for your problem

Under a proposal by Arizona regulators, US WEST would be required to do the following for users in the 520 area code:

- **Waive monthly charges for remote call forwarding from a 602 number**
- **Waive monthly charges for 800 numbers that are substituted for 520 numbers (toll charges would still apply)**
- **Reimburse expenses for business cards, stationery and advertising of the remote forwarding and 800 numbers**

SOURCE: ARIZONA CORPORATION COMMISSION, PHOENIX

Doing the right thing

In most cases so far, the permissive dialing period has been extended past its original date because of user protests. Those users that rushed to inform callers of the new area code felt betrayed by doing the right thing, then suffering for it.

The better approach now is to alert callers that a new area code has gone into effect but that the old one still works. Then ask as many people as possible to try using the new code when dialing out from fax machines and dialing in to pagers, computers, voice response systems, fax-on-demand systems and the like.

Interactive telephony and data communications have proven to be a particular problem for users in the new area codes, and you want to get a reading as soon as possible of the problems you're likely to face.

Empowering the calling party to take action at the time of a failure to connect a call is the key to living through the process, experts say. Bell Communications Research, the regional Bell operating companies and the Federal Communications Commission have made attempts to publicize the problem, but many observers dismiss those efforts as feeble.

"They're restricted to a couple of newspaper ads or bill inserts that nobody reads anyway," said Richard Kuehn, president of RAK Associates, a Cleveland consulting firm.

Once you can sense where your early problems lie, take your experiences to the phone company representative. If there are problems, you will be told, invariably, that it is not their fault. You will have a hard time getting anyone else — such as Bellcore or your long-distance carrier — to take responsibility, either. But it's the local exchange company that should be prepared to offer at least two common alternatives in capturing the calls that cannot get through: remote call forwarding and an 800 number.

With call forwarding, you establish a new number in the existing area code that you ask callers to dial. Calls are then forwarded to your number in the new area code.

Unfortunately, you cannot use the same seven-digit sequence behind the area code for the forwarded number. For example, a suburban Atlanta number such as (404) 555-1234 cannot be forwarded to (770) 555-1234, since that would defeat the purpose of the area code split.

To employ this call forwarding technique, the user must advertise yet another new phone number. In Arizona, a proposal put forth earlier this month by the Arizona Corporation Commission addresses this drawback by forcing US WEST, Inc. to pay for these expenses and waive certain other charges (see graphic).

With the 800 alternative, you substitute an 800 number for the regular phone number in the affected area code. Obviously this is going to make your telecommunications expenses soar if many of the calls are from parties outside your organization.

But even if most of the traffic is internal, there may still be a catch. If you simply substitute a switched-access 800 service, the cost of the receiving office paying for calls using 800 service can be greater than the cost of the sending office paying for the call over an outbound service. ■

Next week: ***NW*** **will tackle the problem of receiving calls from overseas after area codes change and will investigate solutions.**

Sweeping changes

Schedule for new area codes:

Location	Existing area code	Relief area code	Start of permissive dialing period	End of permissive dialing period
Southern Alabama	205	334	1/15/95	5/13/95
Western Washington	206	360	1/15/95	8/20/95
Houston	713	281	3/1/95	3/1/96
Phoenix	602	520	3/19/95	10/22/95
Colorado	303	970	4/2/95	10/1/95
Tampa, Fla.	813	941	5/28/95	3/3/96
Virginia	703	540	7/15/95	1/27/96
Atlanta	404	770	8/1/95	12/1/95
Connecticut	203	860	8/28/95	10/4/96
Tennessee	615	423	9/11/95	2/26/96
Bermuda	809	441	10/1/95	9/30/96
Miami	305	954	11/95 (specific date TBA)	TBA
Oregon	503	541	11/5/95	6/30/96
South Carolina	803	864	12/3/95	5/1/96
North Florida	904	352	12/3/95	5/20/96
Missouri	314	573	1/7/96	7/7/96
Chicago	708	847	1/20/96	4/20/96
Dallas	214	972	2/1/96	8/1/96
Southern California	310	562	2/1/96	TBA
Ohio	216	330	Q1 '96 (specific date TBA)	TBA
Chicago	708	630	8/3/96	11/30/96
British Columbia	604	250	10/19/96	5/3/97

During the permissive dialing period, callers may use either the existing or relief code in the affected territories. After the permissive period ends, the previous code will no longer work.

SOURCE: FEDERAL COMMUNICATIONS COMMISSION, WASHINGTON D.C.

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Briefs

■ **Biscom** *next week will announce a new software-only* **fax server** *at NetWorld+Interop. Faxcom/WorkGroup for NetWare runs on NetWare 3.X and 4.X. nets, and supports Windows, OS/2 and Motif clients. It can convert faxes to text using an optical character recognition feature, interface with scanners to let users scan documents onto networked computers and send a fax via Message Handling Service (MHS)-based electronic mail.*

Faxcom/WorkGroup for NetWare will ship at the end of the month priced starting at $695.

Biscom: (800) 477-1800.

■ *Next week,* **Storage Dimensions, Inc.** *in Milpitas, Calif., will unveil its SuperFlex 1000, an entry-level* **Redundant Array of Inexpensive Disks (RAID)** *storage system. The product can support as many as seven Small Computer System Interface drives. For fault tolerance, Storage Dimensions also offers the RAIDCard array controller for PCI or EISA buses. The system can run on NetWare, Windows NT and OS/2 nets.*

Pricing for the SuperFlex 1000 starts at $7,000, and the product will be available this month.

Storage Dimensions: (408) 954-0710.

■ **Exabyte Corp.** *in Boulder, Colo., has rolled out a 14G-byte external 8mm tape drive with software components from* **network backup** *companies Adaptec, Inc., Arcada Software, Inc., Cheyenne Software, Inc. and Palindrome Corp.*

The new Exasoft CD-ROM software allows users to select one backup software application from a choice of Adaptec CI/O, Arcada Backup Exec for NT, Arcada Backup Exec for NLM, Cheyenne ARCserve for NetWare and Palindrome Backup Director for NLM.

The kit, which includes the tape drive and software, is priced at $2,695 and is available now.

Exabyte: (303) 442-4333.

Unix vendors target Windows integration

X Window product providers Hummingbird and NCD Software ready offerings compliant with Win95 software.

By Peggy Watt
New York

Unix product vendors aren't fighting Windows 95, they're joining it by introducing at Unix Expo this week a variety of interoperability options.

Leading X Window System vendors, such as Hummingbird Communications, Ltd. and NCD Software Corp., are not only updating their products to let users access Unix applications from Windows 95, but they are also bundling in utilities that acknowledge and support a heterogeneous enterprise.

"It's not just about X Window Servers anymore. Users want PC enterprise integration and PC internetworking," said Peter Auditore, marketing director of Hummingbird in North York, Ontario.

The X Window Server market is healthy and growing, according to Eileen O'Brien, a director with the market research firm International Data Corp. in Framingham, Mass.

O'Brien forecasted an annual growth rate of 44% to 49% through the 1990s, which has borne out in a 41% growth rate from 1993 to 1994.

UNIX EXPO PREVIEW

"Windows 95 will push much of this growth," O'Brien said. "A new operating system gives vendors the opportunity to go forward and enhance their products with the kind of utilities Hummingbird and NCD are adding."

Humming along

Hummingbird representatives said the firm's new eXceed family of X Window Server products includes consistent features and functions across different operating systems.

The company's PC-based eXceed 5 for Windows 3.X, scheduled to ship in October, includes a new TCP/IP stack and Network File System (NFS) client software, which were obtained in April through Hummingbird's acquisition of Beame & Whiteside Software, Inc.

The package further supports X Image Extension and Common Desktop Environment specifications, terminal-emulation functions, Microsoft Corp. Virtual Device Drivers (VxD), an electronic mail interface and a Usenet newsreader.

Hummingbird's Windows 95 support will surface first in eXceed 4 for Windows 95, which is scheduled to ship this month. A version that includes the new features of eXceed 5 for Windows 3.X will ship next month. That product, eXceed 5 for Windows 95, will be available as a free upgrade.

Also to ship in October is eXceed 5 for Windows NT, which will provide the same functions except for NFS client support, which will be added later.

Pricing for the Hummingbird products is not yet available.

NCD's PC Xware 3.0 for Windows includes a new TCP/IP stack developed specifically for PC Xware, said Clive Prout, NCD's director of PC X Window Server products.

According to Prout, the custom development provides tighter integration and cleaner operation than mixing and matching components from different vendors.

In fact, NCD is developing an entire TCP application suite, including NFS and File Transfer

See **Unix Expo,** *page 34*

High-speed LANs

Vendors light up fast Ethernet hub market

By Jodi Cohen

A trio of vendors flooded the market last week with fast Ethernet products that will help users breathe new life into bandwidth-constrained networks.

Intel Corp. led the pack by announcing its foray into the fast Ethernet hub market as well as the rollout of new 100M bit/sec adapter cards.

Other fast Ethernet announcements included a 10M/100M bit/sec bridge and management module for stackable 100M bit/sec hubs from Asante Technologies, Inc. and a set of integrated fast Ethernet repeaters/switches from Network Peripherals, Inc. (NPI).

Intel's path into the 100M bit/sec hub market has been paved by Bay Networks, Inc., which is allowing Intel to resell one of its existing offerings.

Dubbed the Intel Express stackable hub, the device will provide 12 100Base-TX ports for Category 5 unshielded twisted-pair wire and can be stacked up to six units high.

Intel plans to offer a future version of the hub for Category 3 cable as well as add an expansion slot for a management module.

In addition to the new hub, Intel rolled out the next generation of its 10M/100M bit/sec adapter cards — the EtherExpress Pro/100 series — that now support PCI buses. The new cards offer increased performance and lower

See **Fast Ethernet,** *page 30*

FAST ETHERNET ON FIRE

The fast Ethernet market will explode this year with 2 million hub ports and 1 million 10M/100M bit/sec network interface cards expected to ship worldwide, according to Dataquest in San Jose, Calif.

McAfee to mix in Saber technology

By Kevin Fogarty
Santa Clara, Calif.

McAfee last week announced a plan under which it will combine its technology with that of recently acquired Saber Software Corp. to offer an integrated line of LAN management products and product suites by mid-1996.

Users will be able to employ the offerings to manage LANs on a departmental basis or — in conjunction with platforms such as Hewlett-Packard Co.'s OpenView — across an enterprise, according to Rick Kreysar, vice president of marketing for McAfee.

The product line, which will draw strength from McAfee's antivirus and software metering technology, as well as Saber's desktop and network manage-

See **McAfee,** *page 34*

Management medley

Product	Function	Availability
SiteMeter 5.2	Software metering	October
SiteMeter 6.0	Metering plus OLE and SQL support	Q1 1996
VirusScan/NT 3.0 and NetShield/NT 3.0	Windows NT desktop and server antivirus tool	Q4
SiteInventory 4.0	Inventory control	Q4
SiteExpress 4.0	Software distribution	Q1 1996
BrightWorks 3.0	Asset management suite	Q1 1996
SaberTools 6.0	Desktop configuration management suite	Q1 1996
SaberLAN Workstation 5.5	Systems management	October
SaberLAN Workstation 6.0	Network backup, bundled with Saber Tools and BrightWorks	Q1 1996
SaberLAN Workstation 7.0	Network backup, plus OLE support	Q2 1996

NET RESULTS

Skip MacAskill and Melinda Le Baron

Remote access is latest battleground for the big boys

We can all agree that remote access is one of the hottest growing markets in the network industry. What we can't agree on is what the term "remote access" actually means.

For some, it refers to LAN-to-LAN interconnection and involves the use of low-end routers such as Cisco Systems, Inc.'s 2500, Bay Networks, Inc.'s Access Node or 3Com Corp.'s Boundary Router lines to provide remote sites and branch offices with access to resources and users on the corporate LAN.

For others, it means providing mobile users and telecommuters with access to regional or corporate offices via dial-up devices from the likes of Shiva Corp. or Xylogics, Inc.

Based on some recent market events, we have a sneaky suspicion that the latter category will provide the greatest number of opportunities over the next 12 to 24 months. As a matter of fact, we could argue that the so-called small office/home office market is still a gold mine waiting to be tapped.

The big boys apparently think so. In recent months, 3Com acquired Primary Access Corp. and Sonix Communications, Ltd., while Cisco bought Combinet, Inc. These acquisitions left Bay Networks without an integral remote access strategy and, therefore, at a competitive disadvantage in the small office/home office market. It answered that challenge directly by snatching Xylogics for around $330 million (*NW*, Sept. 11, page 8).

Although Bay Networks' move comes after its competitors', the company may still be a bit ahead of the game in terms of integrating its acquisition into its existing product line. Bay Networks has a preexisting OEM relationship with Xylogics and has already integrated its technology into Bay Networks' chassis-based offerings and built Optivity net management applications for Xylogics products.

We have considered Xylogics a leader in the remote node market segment. The company has strong sales from its Annex series of dial-in bridge/router products, recently acquired U.K.-based Scorpion Logic, Ltd. for its ISDN technology, and has stayed relatively independent from major platform and internetworking vendors. So the acquisition will give Bay Networks an immediate presence in the remote access market.

The fallout of these mergers and acquisitions for existing Cisco, Bay Networks and 3Com users is a positive one. Now they can not only get access to best-of-breed remote interconnection products, but they also will achieve a network management and administrative benefit when these product lines are linked.

The moves also will serve to increase the distance between the big boys and everyone else. And they may put the most pressure on Cabletron Systems, Inc.

Xylogics was one of Cabletron's key strategic partners in the remote access space. And while Bay Networks has said it will absolutely honor all existing contractual agreements that Cabletron had with Xylogics (nudge, nudge, wink, wink), Cabletron obviously has a decision to make concerning its long-term direction in this area.

The other unknown involves Shiva. It can be argued that Shiva is the leader in the remote access space, but within the last six months, its competition has suddenly become billion-dollar companies with deep pockets and endless user bases.

How will Shiva react? Can it continue to compete and win against the likes of the big boys?

Can you say "acquisition target?"

MacAskill a senior research analyst and Le Baron is a research director in Gartner Group, Inc.'s Network Computing Infrastructure group. They can be reached by E-mail at inquiry@gartner.com or by phone at (203) 316-1111.

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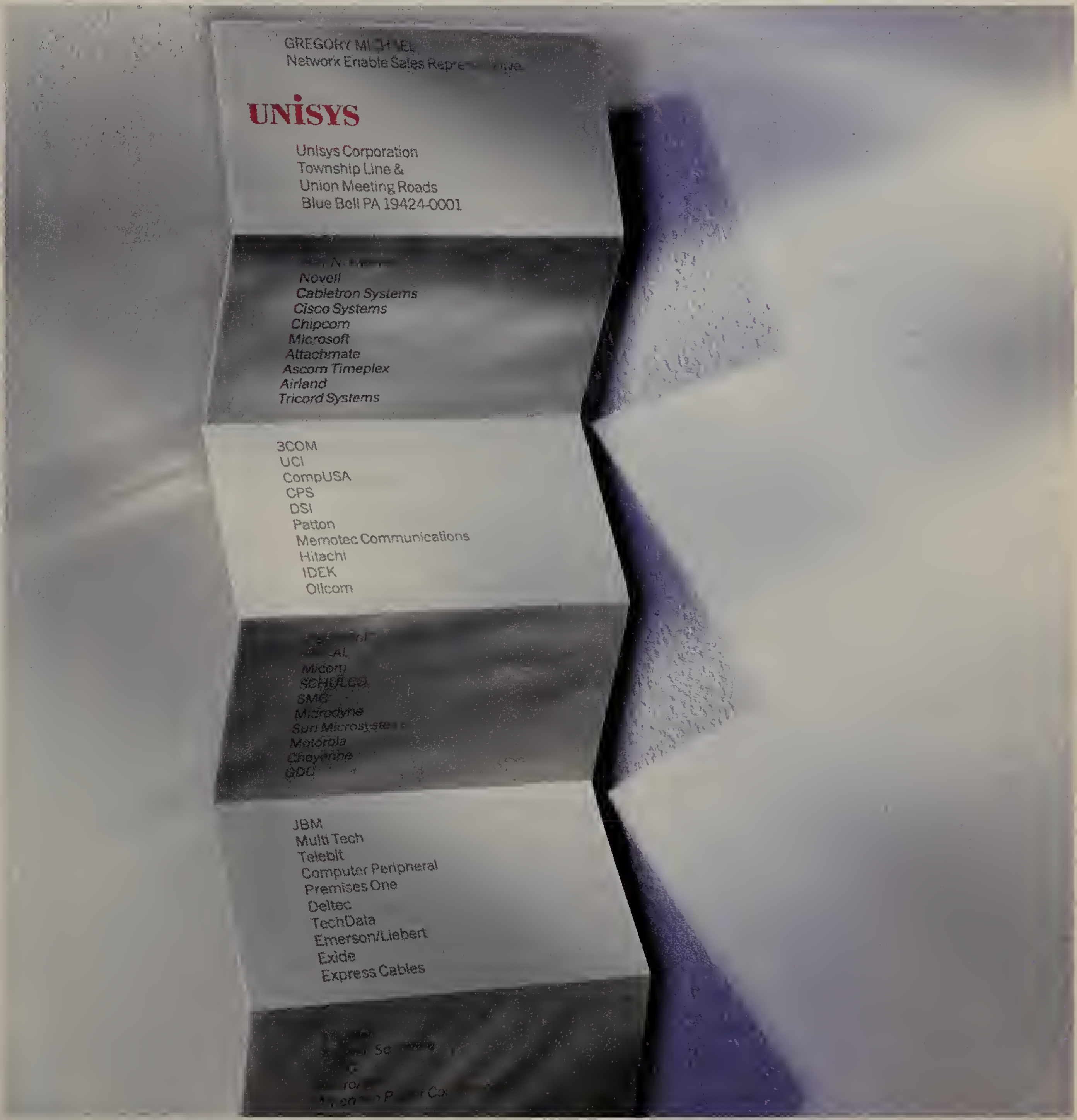

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ATM migration

Alantec aims at ATM with new hub modules

By Jodi Cohen

San Jose, Calif.

Alantec Corp. last week aired a module for its switching hubs that will allow users to embrace Asynchronous Transfer Mode technology while retaining their investment in legacy LANs.

The PowerCell 350, Alantec's first ATM hub module, is based on Fore Systems, Inc.'s ForeThought LAN emulation software for supporting legacy LAN applications over ATM nets. The module, which will be demonstrated at next week's NetWorld+Interop show in Atlanta, will let Alantec PowerHub users connect Ethernet, fast Ethernet and Fiber Distributed Data Interface LANs to ATM networks.

"This is opening up the options that end users have as far as what they can start putting over ATM and what they can start connecting over ATM backbones," said Andy Hacker, an analyst with The Tolly Group consultancy in Manasquan, N.J. "This is the first product I've seen that lets users do fast Ethernet to ATM."

ALANTEC ADDS ATM

Product	Price	Availability
PowerCell 350	$11,995	November
PowerHub 3160	$24,950	Novemeber
PowerCell 700	Not available	December
PowerCell 600	Not available	Q1 1996
PowerHub 4000	Not available	Q1 1996

Although Alantec will eventually offer ATM modules for its entire line of switching hubs, the first devices to support the new PowerCell module will be the PowerHub 3000 department hub and 5000 workgroup hub. Two 155M bit/sec ATM PowerCell 350 modules can be inserted per hub, with each module supporting one FDDI ring and one ATM interface, and as many as 12 Ethernet segments.

Alantec also announced the PowerHub 3160, a preconfigured Model 3000 with one PowerCell 350 ATM module.

The PowerCell 350 module allows users to link PowerHubs with any ForeThought-compliant ATM product, such as Fore's ASX-200 ATM switches.

Alantec will help users migrate from Fore's proprietary LAN emulation implementation to the ATM Forum's LAN emulation 1.0 protocol through a software upgrade available in December.

Although Hacker said he typically frowns on proprietary solutions, he said he likes Alantec's approach. "The fact that this is pre-standard is overshadowed by the fact that Fore has been doing this for a while, and they are getting good at it," Hacker said.

NETWORLD INTEROP PREVIEW

He added that when all of the standards are finalized, Fore will be in a good position to upgrade its ATM software for partners like Alantec.

Future ATM modules will be available for the PowerHub 7000 backbone switch, the PowerHub 6000 department switch and the PowerHub 4000 workgroup switches.

The PowerCell 350 is priced at $11,995, while the PowerHub 3160 is priced at $24,950. Both will be available in November.

©Alantec: (800) 252-6832.

3Com adds LAN emulation to net gear

By Michael Csenger

Santa Clara, Calif.

3Com Corp. this week is adding LAN emulation support to its Asynchronous Transfer Mode workgroup and Ethernet edge switches, letting users interwork Ethernet and ATM across campus backbones.

LAN emulation is an ATM Forum specification that supports legacy LAN applications over ATM networks. Developed by 3Com's ATM division, formerly known as NiceCom, Inc., the LAN emulation software is divided into client and server components.

The client software resides on 3Com's ATMlink adapter cards, while LAN emulation server functionality is included in the company's CELLplex 7000 and LinkSwitch 2700 software suites.

The LinkSwitch 2700 is 3Com's ATM edge switch, which is designed to link switched Ethernet segments to an ATM backbone.

The CELLplex 7000 is a pure ATM campus backbone switch that connects multiple edge switches and ATM-attached devices.

Users can upgrade to the LAN emulation versions of 3Com's switching software, which is available now, for free.

WHERE 3COM WILL FIRST OFFER LAN EMULATION

- ATMlink adapter cards
- LinkSwitch 2700 Ethernet-to-ATM switch
- CELLplex 7000 ATM campus switch

3Com has meshed ATM LAN emulation technology with its virtual LAN management scheme in an effort to unify switched LAN networking with ATM. Currently, this is limited to fairly rudimentary mapping of LinkSwitch 2700 ports to different virtual LANs, all connected over ATM-based virtual circuits.

Other vendors provide more flexible virtual LAN management strategies based on higher-layer protocols or host media access control addresses.

3Com is also headed in that direction, according to Nachman Shelef, vice president and general manager of 3Com's ATM division.

Analysts said that even with its LAN emulation announcement, 3Com has some catching up to do in the ATM field.

"3Com's ATM strategy is not as well-developed or -defined as many others," said Skip MacAskill, an analyst with Gartner Group, Inc. in Stamford, Conn.

That's partly because 3Com is so busy trying to develop a consistent net management scheme based on its Transcend technology and embracing all the different products it has acquired in recent months, he said.

"When you layer ATM and virtual LANs on top of that, the challenge is even greater," MacAskill added.

One question that lingers regarding 3Com's ATM strategy is "what becomes of the NiceCom ATM line while 3Com is also partnering heavily with IBM, which has a much more developed ATM architecture," he said.

©3Com: (408) 764-5000.

BusinessBriefs

In what has become a steady stream of reorganizations, **Novell, Inc.** has again restructured one of its divisions. **The Information Access and Management Group,** which oversees management and connectivity products, has slimmed down to include three internal divisions rather than six.

The Internet Commerce Division, headed by former net management group chieftain Vic Langford, will oversee the public NetWare Connect Services products and Internet applications. The Communications Infrastructure Division, which includes routing, remote access, telephony and wireless communications, will be led by Tom Steding. The third group, the Management Products Division, will handle net management applications and be led by former telephony czar Prem Uppaluru.

Separately, **Novell, Inc.** announced last week a partnership with Kansas City, Mo.-based electric and gas utility holding company **UtiliCorp United,** under which the two would use Novell's NetWare Embedded Systems Technology (NEST) as a platform to build applications that can communicate over ordinary power lines at up to 2M bit/sec.

The aim is to save energy by letting power companies remotely manage NEST-enabled air conditioners and other power hogs in homes or offices. Novell also is working with an unnamed third party to develop a power line modem that would let users connect their PCs to a utility's network backbone using power lines.

Ethernet switch vendor **Xedla Corp.** in Wilmington, Mass., last week appointed **Ashley Stephenson** as the company's president and chief executive officer.

Stephenson comes to Xedia from software development tool vendor Isis Distributed Systems, Inc., which in 1993 was acquired by Stratus Computer, Inc., where he was vice president of marketing.

Fast Ethernet

Continued from page 27

CPU utilization over the previous adapters.

Felipe Tobilla, a consultant with Pacific Mutual, located in Newport Beach, Calif., recently implemented about 100 of the new adapters and has noticed significant network performance gains.

"Moving from 10M bit/sec to 100M bit/sec has made a big difference," he said. "The processing time for our batch jobs has been dropped from about one hour to 10 minutes."

The EtherExpress Pro/100 adapter is priced at $169, and the Intel Express stackable hub is priced at $2,375. Both will be available in October.

Asante LAN assault

Separately, Asante has become the first company out of the gate with a Simple Network Management Protocol-based management module for fast Ethernet stackable hubs. The AsanteFast 100 Management Module sits on top of an Asante fast Ethernet hub stack, enabling a network manager to monitor the entire stack for performance, traffic bottlenecks and collisions.

The AsanteFast 10M/100M bit/sec bridge allows users to bridge between existing 10M bit/sec Ethernet LANs and 100M bit/sec backbone or server links.

Pricing for each device will be about $1,500. The 10M/100M bit/sec bridge will ship in November, and the management module will be out in December.

NPI hubbub

In other fast Ethernet news, NPI rolled out three 10M/100M bit/sec switching hubs.

The Snapswitch FE2150 offers six switched Ethernets and five shared fast Ethernet ports, while the Snapswitch FE2250 provides 12 switched Ethernet links and five shared fast Ethernet connections.

Both devices provide managed switch and repeater functionality in one box, which allows users to set up high-speed server connections while maintaining the installed Ethernet infrastructure.

The Snapswitch FE2100 is a smaller workgroup device that supports six switched Ethernets and one shared fast Ethernet port.

NPI's other new 100Base-T products include a PCI-based fast Ethernet server adapter card and a 12-port stand-alone fast Ethernet repeater.

Pricing for the switches, available in January, starts at $2,995. The adapter will cost less than $300, and the repeater is priced at less than $3,000.

Both of the products will be available in the first quarter of 1996.

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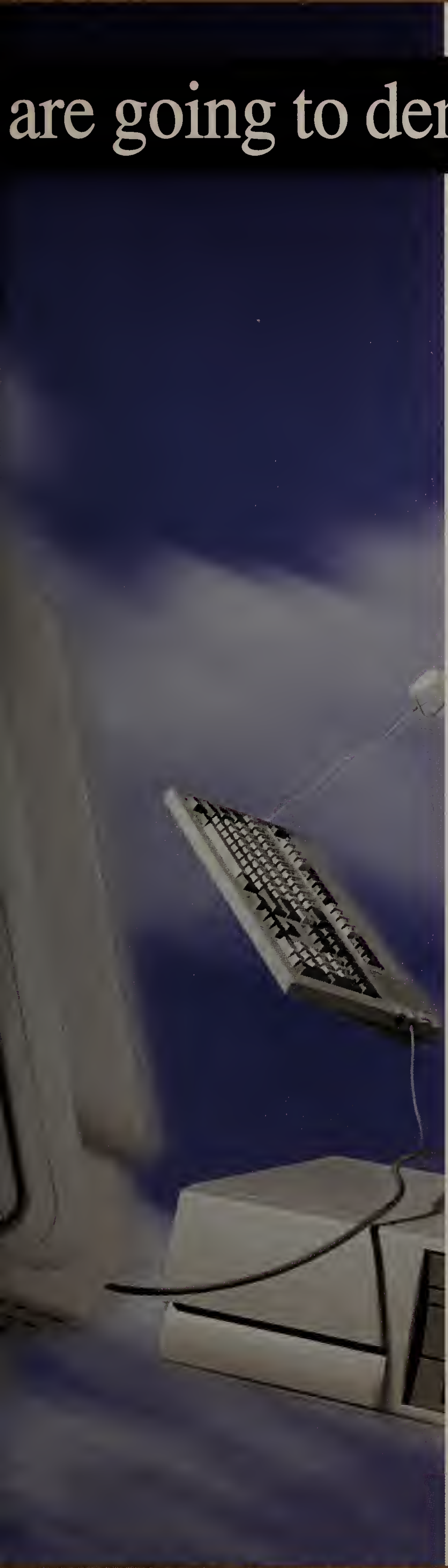

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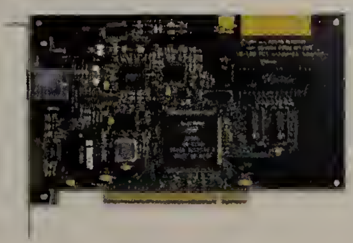

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McAfee

Continued from page 27

ment technology, will be tied together using a common data format, SQL database repository and alert format.

Sylvia Clark, an analyst at Aberdeen Group, Inc. in Boston, said McAfee is taking an approach that is both flexible and technically sound.

"I like that they are letting people buy point products and scale them into suites, rather than just offering point products or just suites," she said. "And it looks like pretty tight integration, with common services and a repository."

A common scripting language and support for Microsoft Corp.'s OLE will let the products share data and call on each others' capabilities easily, Kreysar said. For example, users could write a script for the SiteInventory workstation auditing tool that would tell it to mark the addition of a new PC on the network and launch the SiteExpress software distribution tool to install applications.

The applications will be able to pass Simple Network Management Protocol data across TCP/IP links to OpenView and other enterprise management platforms. The products will run on Windows NT clients and servers, and will support Novell, Inc.'s NetWare Directory Service and Windows NT's Policy management for user and group management.

The final product line will include 10 basic offerings bundled into suites aimed at different levels of the enterprise management equation.

Most of the products will be rolled into two basic suites — BrightWorks and SaberTools.

BrightWorks, designed for asset management, will include SiteMeter, SiteExpress and SiteInventory.

SaberTools, designed for desktop configuration management, will include NetTools, SaberMenus and NetRemote.

The SaberLAN Workstation suite, which includes BrightWorks, SaberTools and a storage management application, is designed as a comprehensive LAN management suite.

> *"I like that they are letting people buy point products and scale them into suites, rather than just offering point products or just suites," an analyst said.*

The McAfee Systems Management suite includes all the other bundles plus McAfee's network antivirus product and Server Manager.

©McAfee: (408) 988-3832.

Unix Expo

Continued from page 27

Protocol (FTP) clients, which also will be marketed separately from X Window Server. The new package, Marathon, will be marketed as a collection of systems administration tools that work with a variety of X Window Server software.

Using the Marathon suite, network managers will be able to implement standard stacks and scripts across desktops, Prout added.

Most of the new PC Xware features are also in Marathon, including FTP and file transfer from multiple remote hosts, a Motif-compliant local window manager and VxD support, as well as support for common X terminal functions.

Although PC Xware 3.0 and Marathon support only Windows 3.X, Windows 95 versions are expected to ship by year-end. NCD released a version of PC Xware for Windows NT earlier this summer.

Both PC Xware 3.0 and Marathon are scheduled to ship this month. PC Xware 3.0 is priced at $545, with site license options starting at $327 per user for 20 users; Marathon is priced at $325.

Esker raises the curtain

Also being announced at Unix Expo is Tun Plus 8.0, a suite of LAN communications software from Esker, Inc. of San Francisco. The modules, set to ship next month, include TCP/IP stacks, terminal-emulation functions, a SQL middleware program and an Internet-compliant mail and fax program. The suite is priced at $395 for a single license and starts at $1,695 for a five-user license.

©Hummingbird: (416) 496-2200; NCD: (415) 694-0650; Esker: (800) 883-7537.

COMMENTS?

See "How to reach us" on the Opinions pages.

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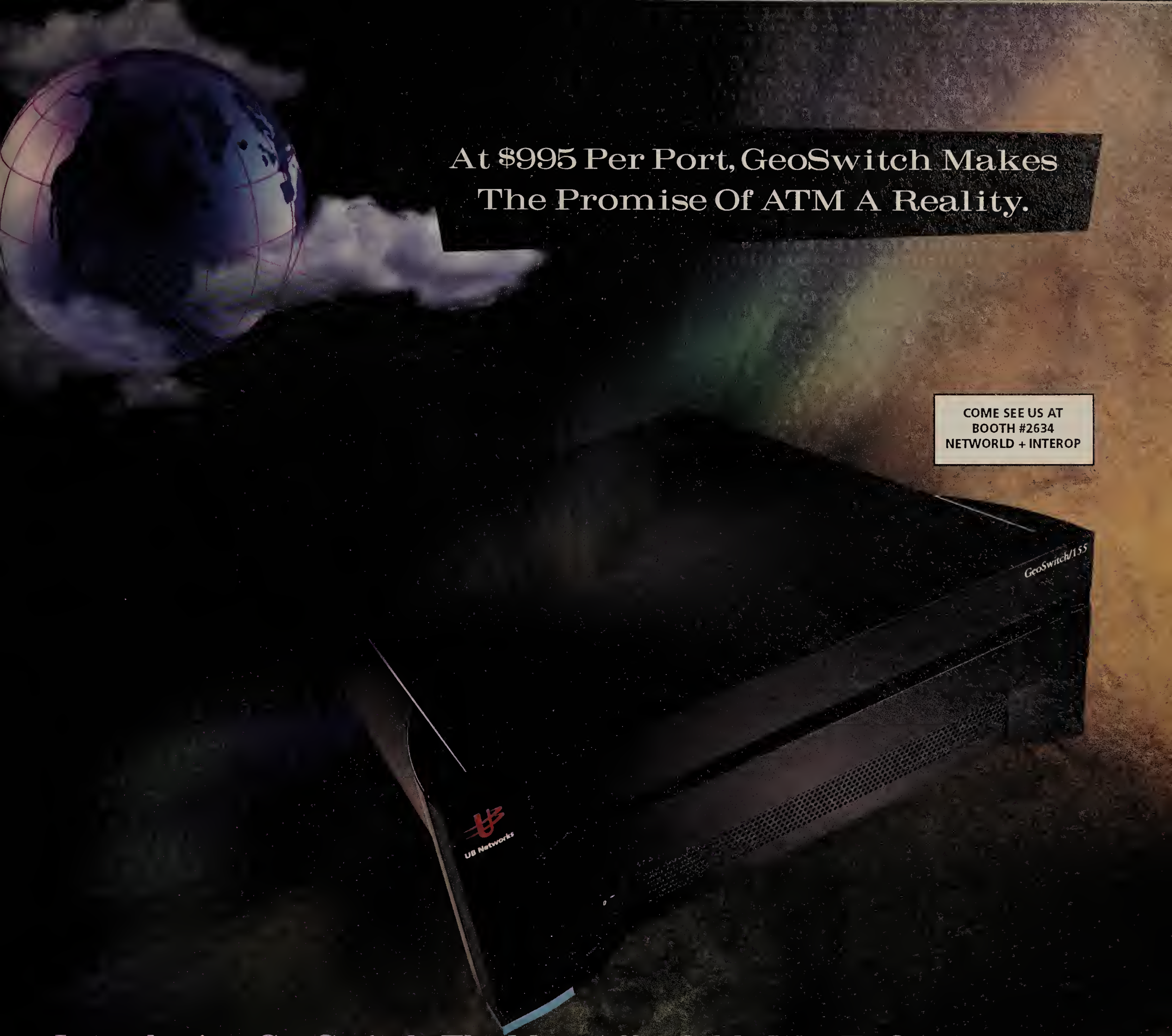

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8:35 AM
Tiptoe down hallway to investigate.

wumpa da wumpa da wum

8:37 AM
It's the printer trying to speak.

8:38 AM
It's Greek to you.
But you bought IBM, so you get IBM service.

9:36 AM
They arrive to translate. Printer's saying, "Clean my print head."

10:29 AM
Heads are rolling. But not yours.
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Briefs

Individual, Inc. *is upgrading its Lotus Development Corp.* **Notes-based** *First on-line news service with a release available today that lets end users pick and choose what ends up on their desktop each morning.*

Previously, end users could only receive the news feeds as selected by their company. Now the service includes filtering agents that let Individual ship only those stories that match a user's profile.

Companies are charged according to the number of users that subscribe and the publications selected.

Individual: (617) 273-6000.

Blyth Software, Inc. *in Foster City, Calif., has released new versions of its* **Omnis development tool set** *that includes tools for deploying and maintaining client/server applications on multiple operating systems.*

Product	Price
The Workgroup Edition	$495
The Server Edition	$1,595
The Enterprise Edition	$2,295

The Workgroup Edition is aimed at LAN applications. It includes the basic Omnis tool set and Omnis Database. The Server Edition is aimed at department applications that are based on a single database server. The Server Edition supports the Oracle Corp. database. The Enterprise Edition is for large-scale, distributed applications. It includes an array of database access modules and a version control system.

Blyth: (415) 571-0222.

XDB Systems, Inc. *in Columbia, Md., is shipping Version 5.0 of XDD Server, a* **DB2-compatible database** *for Microsoft NT Server and Novell, Inc. NetWare. The release includes a new Log Manager, which has been designed for high-performance database activities, and Buffer Manager, which minimizes disk access. Pricing is $2,750 to $5,000, depending on the number of users.*

XDB: (410) 312-9300.

Oracle exec gives glimpse into company's future

Several thousand database and application users will convene this week for the International Oracle User Week here where they hope to get a glimpse at Oracle Corp.'s future. Although Oracle is the leading Unix database vendor, the company is not resting on its laurels and is moving aggressively into Internet, object technology and other emerging markets. *Network World* Senior Editor Barb Cole spoke with Jerry Held, Oracle's senior vice president of server technology, to get a preview of where Oracle is headed.

What key messages can your users expect to hear from Oracle this week?

The headliner will be data warehousing. We have a major presentation scheduled in which we'll give an update on the Oracle Warehouse [data warehousing system] and demonstrate a very large database on stage.

There are two parts to our data warehousing story. One is that we're running very large data warehouses today. The other is the breadth of our data warehouse offering. Warehousing includes analysis, information retrieval, text and multimedia.

We'll also talk more about the integration of the Express [multidimensional database server] products, which we acquired last April from IRI Software.

We'll also preview Oracle7 Release 7.3, a significant new database release. I sometimes think we should have called this one Release 8.0 because there's so much in it.

"The main themes [for Oracle] this past year have been OLTP, data warehousing, distributed applications, the Internet and multimedia. We'll continue to emphasize those over the coming months."
Jerry Held

We'll talk about new features, like bitmap indexing.

The other thing you'll see is a lot more on our systems management offering. We'll be showing the new Enterprise Manager and Workgroup Manager tools. We'll also be talking about improvements in the on-line transaction processing area.

It would seem that several of the technologies on which Oracle is focusing, such as the Internet and the move to objects, could have a far-reaching impact on corporate networks. How can organizations plan for that?

In terms of object technology, I'm not so sure there's necessarily an impact on the network. In some ways, objects may reduce network traffic. For instance, an object/relational database can probably retrieve data more efficiently than a relational database. If you think about objects in terms of multimedia data, you'll need more bandwidth. However, lots of networks are able to handle multimedia today.

Network-centric computing will be a big deal, especially networks like the Internet that go beyond the enterprise.

Is the push to Internet-enable your products being driven by your customers or are you betting that this is a direction they'll want to move in?

There's a huge interest in the Internet that's being driven by the fact that the World-Wide Web is an on-ramp to the Internet for the technologically challenged. As a result of the Web, the average consumer is now network-aware. We will encourage our customers to think of the Web as a gateway to corporate databases.

Last spring, we posted a free kit for users to experiment with connecting Oracle databases to

See **Oracle**, *page 38*

New development tools move beyond simple client/server

OEC and Transarc software support DCE technology.

By John Cox

Several development tools vendors this week are unveiling products to move users beyond simple client/server applications to more robust, distributed ones.

Two of the products, from Open Environment Corp. (OEC) and Transarc Corp., support the Distributed Computing Environment (DCE), which is a set of services defined by the Open Software Foundation, Inc. and designed for network applications.

Separately, Visix Software, Inc. today will unveil a database communications software product, along with a report writer for accessing information from multiple vendors' database servers.

OEC has created a Windows 3.1 version of its Entera product, a graphical tool set for creating three-tier applications. Entera Workbench for Windows is designed to guide users through the development cycle. Developers can point and click to access assorted Entera tools as well as invoke a range of other tools from the workbench, including third- and fourth-generation languages, source code managers and so on.

OEC has created a Windows 3.1 version of its Entera product, a graphical tool set for creating three-tier applications.

Entera stores information in a repository on the developer's PC and then generates the needed interfaces between graphical user interface and business logic, as well as the SQL code to access relational databases.

Entera Workbench for Windows will be available Sept. 30 for $8,000.

Transarc will announce at Unix Expo in New York Version 2.0 of its Encina DCE-based transaction-processing monitor. The new version includes Encina++, a set of C++ class libraries that developers can use to build object-oriented applications that include Encina-based

See **Tools**, *page 38*

Revelation kit eases Notes, DBMS access

By Annmarie Timmins
Stamford, Conn.

Revelation Technologies, Inc. this week will begin shipping a revised tool kit that lets developers directly access Lotus Development Corp. Notes and relational data from within the same application, as well as build applications that give end users the same data access capabilities.

OpenInsight for Workgroups 3.0 also adds support for Notes DocLinks, which provide hyperlink-like connections between Notes documents, as well as a replication management tool.

In addition, Revelation has added a Runtime Deployment Kit for distributing applications, which can be used by simply pointing and clicking, as well as a feature that allows developers to work on an application remotely and then replicate changes to other developers.

Easy street

The upgraded version of OpenInsight should make life a lot easier for Notes application developers, according to James Acquaviva, president and chief executive officer of Revelation here.

VIP TREATMENT

In July, Revelation bought Lotus Notes VIP, Lotus' Windows-based application development tool kit for creating Notes applications.

Previously, those wanting to access information from both Notes and relational databases had to use Microsoft Corp. Visual Basic to write a Visual Basic Control (VBX) and then try to integrate it into Notes, he said. Otherwise, developers could use a product such as Trinzic Corp.'s InfoPump, which transfers data among one or more data sources.

The downside of either the VBX or data transfer product

See **Revelation**, *page 38*

Tools

Continued from page 37

distributed services.

Also new is Encina Console, a graphical administration tool for controlling an array of distributed resources, such as Encina servers and database processes. The previous release had only a command line interface.

Encina 2.0 will ship on SunSoft, Inc. Solaris in October for $150 per client and $5,500 per server. Windows NT and Digital Equipment Corp. Unix versions will ship later this year.

Also new is Encina Console, a graphical administration tool for controlling an array of distributed resources, such as Encina servers, DCE application servers and database processes.

Visix is introducing Galaxy dbSpectrum and Galaxy dbSpectrum/Reports as additions to its Galaxy Application Environment, an object-oriented, cross-platform tool set with a distributed services framework.

Galaxy dbSpectrum is a middleware product, which is actually a set of class libraries that create an asynchronous link between client applications and multiple server databases.

In the past, developers had to write the code to make a connection, which chained the client code to one specific database.

The dbSpectrum/Reports adds an integrated report writing API and a visual report editor to the Galaxy tool set.

Both products will be available this month and run on an array of operating systems. Galaxy dbSpectrum works initially with Oracle Corp. and Sybase, Inc. databases. Each product's pricing starts at $2,500, which includes software for one server. Additional server packages cost $250 each.

©OEC: (617) 562-0900; Transarc: (412) 338-4400; Visix: (703) 758-8230.

BusinessBriefs

IBM last week said it will buy privately held **Early, Cloud & Co.,** mainly for the Newport, R.I., company's CallFlow call center automation application. Big Blue said it expects Early, Cloud's Message Driven Processor, a message-oriented middleware product, to be sold typically as one element in a CallFlow solution. Terms of the purchase were not disclosed. The agreement is subject to federal approvals.

IBM also has created a new business unit, called Customer Relationship Solutions, under Patricia Mitchell.

The merger of Smalltalk language vendors **ParcPlace Systems, Inc.** and **Digitalk, Inc.** has been completed, following approval of the deal by both companies' stockholders last month. ParcPlace is issuing 3.8 million shares of its common stock in exchange for all Digitalk's stock and options.

The new company, ParcPlace/Digitalk, is based in Sunnyvale, Calif., and sells application development tools based on the Smalltalk object-oriented language.

A group of companies including **SunSoft, Inc.** and **Sybase, Inc.** have formed The Technical Advisory Board, which plans to work at solving issues involved with integrating object and relational technology from multiple vendors.

The group will promote the business benefits of object technology and undertake joint development efforts.

Other members of the group include Persistence Software, Inc.and Stanford University.

SHARED LOGIC

Banyan: The message isn't getting across

Preparing my keynote speech for Banyan's user conference in San Jose, Calif., Oct. 30-Nov. 2 made me realize that Banyan has a problem. Simply put, the company just does not get any respect.

These guys have been technical innovators for years. In fact, I'll even go out on a limb to say that Banyan was the first company to understand enterprise distributed networking.

Mike Rothman

Unfortunately, there is little room for technical elegance in today's networking landscape. It's a battle fought on the marketing and sales front lines, where vaporware, slideware and mind-share dominate users' buying decisions.

It's a place where a firm's strategic direction — such as Microsoft Exchange E-mail products — can freeze a market for years, while users patiently wait for the products.

With all the hubbub around NetWare Directory Services, you'd think Novell invented enterprise directories. Let the record show (in my best lawyer voice), Banyan's StreetTalk has been around for more than 10 years.

E-mail is another area where Banyan has been innovative.

With the acquisition of Beyond a few years back, Banyan bought the most flexible and user-friendly mail front end in the business. Combining Beyond's technology with the Intelligent Messaging back-end platform, Banyan was perhaps the first company to deliver true client/server messaging for enterprise networks.

Late last year, I wrote a letter to Santa in this column, asking for a better client/server mail system and other E-mail capabilities. I have to give credit to Banyan's analyst relations department for keeping me honest: The Banyan folks informed me that Banyan's messaging platform has most of the things I was asking for.

For example, I asked for scalability up to a few thousand users across a network. Banyan doesn't play into the workgroup space but does have installations numbering into the thousands.

I also wanted multiplatform support, and Banyan's got that, too. Intelligent Messaging ships on all the major Enterprise Networking Service platforms, including VINES, AIX, NetWare and soon, Windows NT.

Banyan also has got native API support, gateways, Simple Network Management Protocol support and the kicker — an integrated enterprise directory.

Banyan was even the first to introduce a mail application server that links fields in a mail form to fields in a corporate database, and provides forms routing and workflow capabilities.

Now Banyan's mail platform is not perfect.

Digital signatures and encryption are needed for true interenterprise mail-based applications. Banyan is working on a government version of this and will have a commercial edition out next year.

Banyan could also use some more third-party integrator support to provide turnkey mail-based application solutions, but the BeyondMail client's ease of use makes internal development feasible.

Lastly, the messaging system is attached at the hip to the directory, which makes it unfeasible for non-Banyan shops to implement it.

Having said all that, does anyone care? Unfortunately, I'm not sure enough do.

Until a white knight appears to enhance Banyan's distribution channels and add some gusto to the company's product pitch, I'm afraid BeyondMail and Intelligent Messaging will remain niche products.

That's a shame, because Banyan's technology still kicks butt.

Rothman is a vice president in META Group, Inc.'s Global Networking Strategies service in Reston, Va. Feedback is welcome either by E-mail at miker@metagroup.com or by phone at (703) 860-6600. Rothman's column alternates in this space with that of Marc Myers, president of Client/Server Connection, Ltd.

Oracle

Continued from page 37

the Internet.

We had more than 20,000 downloads of that kit. We'll shortly have a product that enables users to link Oracle databases to the Web in a production environment.

We're talking about removing the boundaries of the corporate net, but a lot of companies are still struggling with distributing databases within organizations. How does Oracle plan to make that task easier?

Distributed databases have been difficult. Much of our investment in the last year has been in making distributed databases easier to manage. You'll see some big improvements from us in the area of installing software in a distributed environment. We also plan to let users manage replication within the context of our new systems management platform.

What issues do you see driving the client/server database development within the next few years?

Data warehousing will continue to be very hot because it's extremely beneficial to companies. Multimedia will be important because it enables a wide range of applications in the area of training and education, as well as commercial retailing applications designed to run on kiosks. And the Web will definitely change the nature of applications.

The products that we'll be coming out with will be very different from what is available today. Most Internet products came out of academia or had basic capabilities that appealed to lots of users. The next generation of products will be integrated with corporate data and drive computing back to the servers. We'll see more componentware coming off the net as opposed to software-heavy clients that create lots of management issues. ■

COMMENTS?

See "How to reach us" on the Opinions pages.

Revelation

Continued from page 37

approach, said Don DePalma, a senior analyst with Forrester Research, Inc. in Cambridge, Mass., is that some of the benefits of Notes and relational databases do not carry over.

Whereas relational databases are best suited for transactional systems because they offer superior security and fast data retrieval, Notes allows users to search data more easily and share information throughout the corporation.

Native access from Notes to relational data preserves those attributes, which is important since many applications need access to both data sources.

Revelation also has added to OpenInsight a set of visual development tools, called DataSet Objects, that make it easier to work with relational databases. The tools include a query window, a SQL script-building assistant and a database connection builder.

Revelation's report designer, which comes bundled with OpenInsight, includes an enhanced version of its QuickReports, which are built-in templates for designers.

The new templates, called Cross-Tab reports, tabulate data in both rows and columns.

Acquaviva said the company expects to further improve OpenInsight by shipping drivers for Oracle7, Informix Software, Inc.'s OnLine and Computer Associates International, Inc.'s CA-OpenIngres databases in a month or two.

OpenInsight 3.0 is currently available and is priced at $1,995 per developer.

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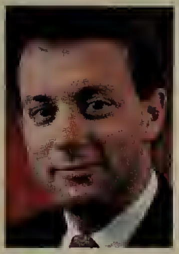
Electronic Commerce

Covering: Tools and Techniques for Interenterprise Networking
and Doing Business On-Line

Briefs

Security Dynamics, Inc. *this week will announce Ace/Server 2.0, Unix software that can support authentication of as many as 25,000 users of the SecurID* **dynamic-password** *hardware tokens.*

Jim Geary, vice president of marketing, said Ace/Server can support more users because it relies on a SQL relational database to authenticate user identity. Version 1.0 used a proprietary flat-file database.



Geary

Version 2.0 also comes with software tools for integrating security management into network and database applications from Oracle Corp., Sybase, Inc. and Microsoft Corp.

Security Dynamics: (617) 547-7820.

Starting Oct. 1, an Encino, Calif.-based Internet service called International Quote Link will let users obtain **daily stock information** *for free on smaller companies whose investment information is generally not found in* The Wall Street Journal *or local newspapers.*

International Quote Link: (818) 789-0892.

Microport, Inc. *has begun shipping NetMark 1000, an Internet* **World-Wide Web server** *priced at $6,000. Separately,* **Open Market, Inc.** *shipped Release 1.1 of its secure Web server, which supports the Secure Sockets Layer protocol developed by Netscape Communications Corp. in addition to the Secure HyperText Transfer Protocol developed by Enterprise Integration Technologies, Inc.*

Under the aegis of the **CommerceNet** *consortium, Lawrence Livermore National Laboratories and BankAmerica's Global Payments Services Division showed that* **EDI messages** *can be sent across the Internet securely by using encryption.*

Avex Electronics migrates EDI traffic from VANs to 'Net

By Ellen Messmer

Huntsville, Ala.

For years, Avex Electronics, Inc. depended on a costly value-added network (VAN) to share electronic data interchange messages with trading partners. Now the manufacturer is saving its money and migrating its EDI traffic to the Internet.

VANs charge by the size of each EDI transaction, an expensive proposition, said Mike Gordon, manager of the electronic commerce group at Avex. So about three months ago, the company began using the Internet, with a flat monthly charge, to transmit and receive EDI business transactions.

For the time being, Avex is still running dual-mode EDI using both a VAN and the Internet (see graphic), but the company plans to migrate the bulk of its EDI traffic to the Internet in the future.

Avex has 81 trading partners, which account for more than 100,000 monthly X12-based EDI transactions, which are mostly purchase and change orders, invoices and planning schedules.

The existing system is a custom system where EDI translation software takes flat-file data from business systems and converts it into standard X12 formatted transactions that all trading partners can interpret.

The company's business processing software, Data3, Inc.'s Manufacturing and Resource Planning 2 System, runs on an IBM Application System/400 minicomputer along with EDI 400 translation software from Premenos Corp.

The translation software takes the business data and puts it into X12 EDI messages to send to trading partners over a VAN.

To adapt this configuration to support Internet access, Avex added a LAN-based server running Premenos Templar for Unix, software that can take the X12 data and put it in a Multipurpose Internet Mail Extension (MIME) envelope.

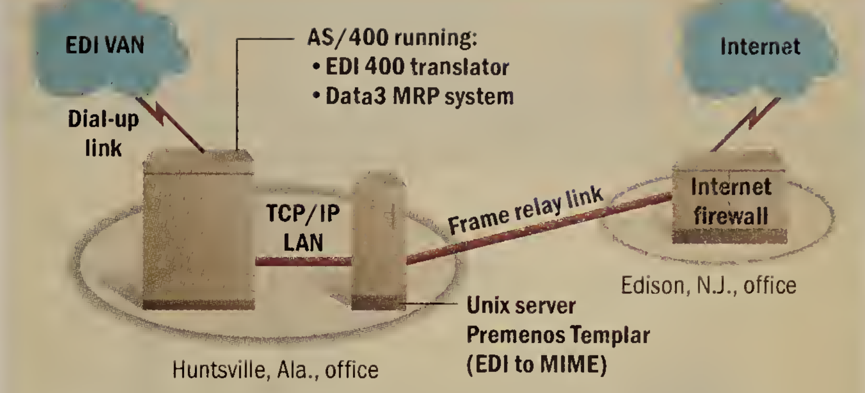
MIME is an extension of the Internet's E-mail standard, the Simple Mail Transfer Protocol. Once an EDI message is packaged in a MIME envelope, it is sent over an Avex corporate 256K bit/sec frame relay link from here to Edison, N.J., where Avex has access to the public Internet just outside the company's Internet firewall.

Avex is now exchanging EDI messages over the Internet with National Semiconductor Corp. and Texas Instruments, Inc., as well as other customers.

The Premenos Templar software uses public-key technology from RSA Data Security, Inc. to encrypt and sign each message with a digital signature before it is sent over a TCP/IP network or the Internet.

When the EDI message reaches the trading partner's Templar server, it is automatically decrypted, verified and authenticated. "Internet security is here for the most part," Gordon said.■

EDI over the Internet at Avex Electronics



Avex Electronics still uses dial-up links to a VAN to send EDI messages from its AS/400 but is migrating to a Unix server with an Internet connection.

GRAPHIC BY SUSAN J. CHAMPENY

BUSINESS SPACE

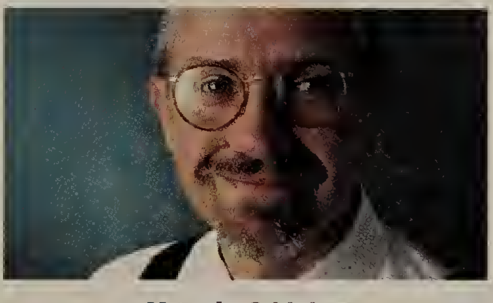
Brilliant image and fuzzy concepts

If I send a message to, say, "rhinoceros" in your domain, what will happen?

If your E-mail system is like that of most organizations, the reply may well be:

<<<ERROR 562>>>: ITEM DESTINATION PARSE FAILURE REPLY=NO ENTRY IN MASTER ID DATABASE, REFERRALS NOT SUPPORTED—DTG120452—ABORT PROCESS 32—DAISY, DAISY, GIVE ME YOUR ANSWER DO...

...and so on.



Mark Gibbs

I ask you, does that make sense? I mean, your organization has taken the time and spent the cash to build an information superhighway on-ramp (I make myself gag and heave by using that term), and when passersby try to pull off and knock on the door, you do the on-line equivalent of shouting "Go away" through the letter box.

What your messaging system should do is reply with a more helpful message. For example:

"We're sorry, but we can't find anyone on our E-mail system with the name you specified. The way we name people here at (blah) is (blah, blah, blah). You can check with our directory assistance at (blah), or drop a note to (blah), and we'll be only to glad to help you. Have a nice day."

Without this kind of thinking, your company will look like the rest of the technogeeks out there on the infobahn (gak, urk, I did it again).

What this is all about is your on-line image. And how well you present yourself depends on how well you understand your market position and objectives. Just look at the majority of Web sites; most merely replicate the company's real-world presence. They do little to use this new media to maximize impact and opportunity.

I have reviewed many of my clients' Web sites, and time and time again, the major flaw lies in not understanding the fundamental nature of the Internet in general and the Web in particular.

We're so used to paper as our information distribution medium that we forget that on-line we can be nonlinear, interactive and seductive.

Web site faults fall into three major categories: structure, design and intent. The first of these faults — structure — is usually because the site is trying to deliver data in bulk rather than information in layers. The result is always a Web site that looks dull, dull, dull.

Design is the slipperiest of all the problems. Effective, well-considered designs are few and far between on the 'Net — some of my favorites are Renco Encoders, Mama's Cucina, Internet Underground Music Archives, Clement Mok Designs and Razorfish. These are among no more than 2% or 3% of sites displaying excellence or just plain good workmanship. Other than that, garbage is everywhere.

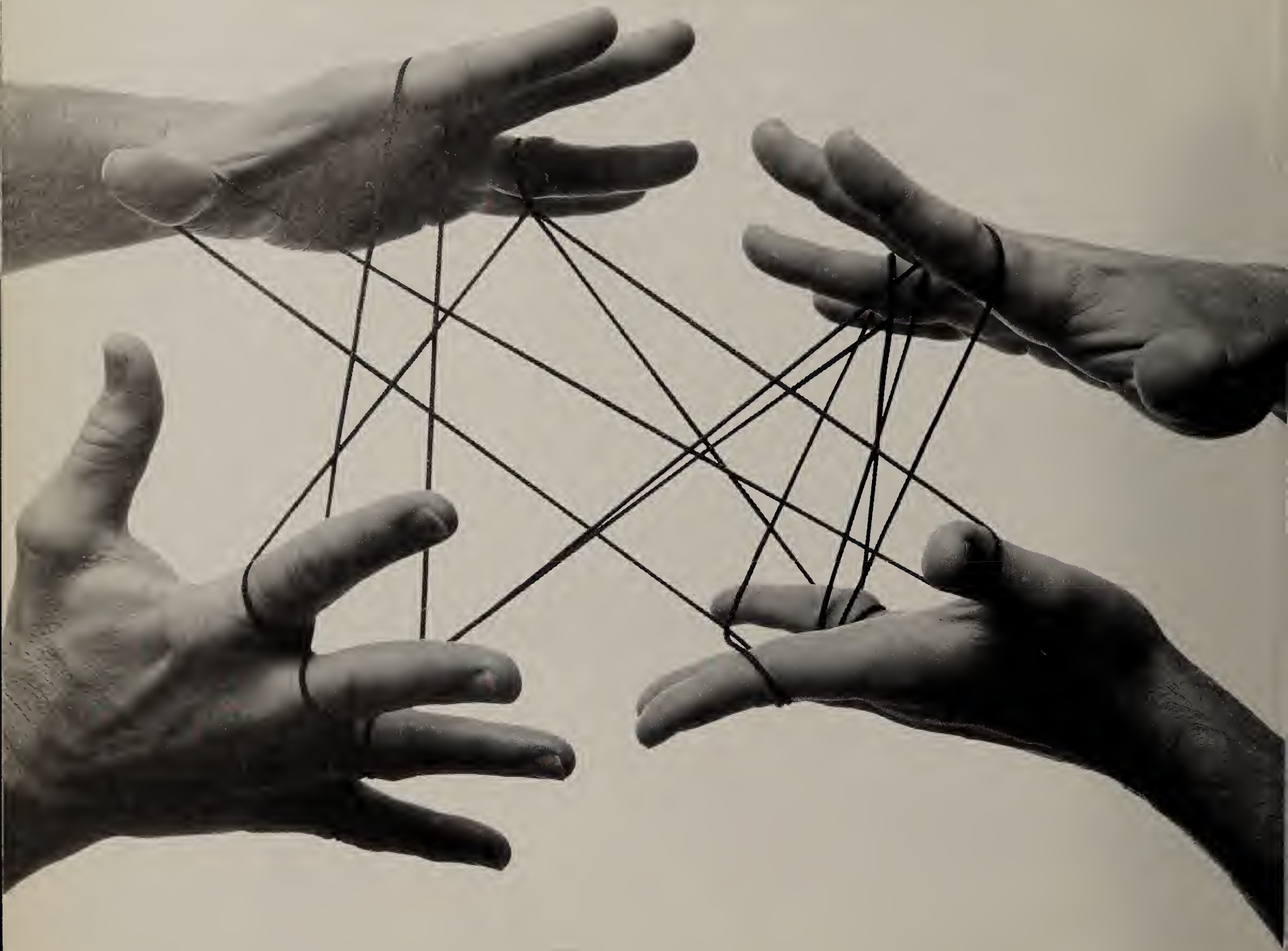
The last of the three is intent. If it isn't relevant to your message, it doesn't belong on your Web.

How many sites have you visited where you found them giving you links to scores of other sites that they think are way cool? You have got to conclude that these guys just don't care whether you stay on their site or not.

So whether we're talking about E-mail or Web sites, the effectiveness of your presence all comes down to whether you have a clear vision of your on-line image.

"There is nothing worse than a brilliant image of a fuzzy concept." — Ansel Adams.

Gibbs is a writer and consultant based in Ventura, Calif. This week, he will hear just how much his new septic system will cost. Send recommendations for tranquilizers to mgibbs@gibbs.com or call him at (800) 622-1108, Ext. 504.



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When will *Network World* have a World-Wide Web site?
Fred Stanley, Newport News, Va.

Next week, we unveil Network World Fusion, which will include top news stories of the week, features, mini-tutorials and hyperlinks to related articles and resources elsewhere on the Internet.

An Industry Watch section will be included to provide analysis of how networking company stocks fare each day.

You'll also find interactive reader forums and areas devoted to professional development, management strategies and job listings. Other resources include an index off information resources organized by technology, a two-year archive of *Network World* articles and an interactive catalog of networking products and services.

Access Network World Fusion starting Sept. 25 by pointing your Web browser at http://www.nwfusion.com. To speed the log-in process, *Network World* subscribers can use the Network World Fusion number printed on the mailing label of their Sept. 25 issue.

Help desk FAQ:
From time to time, we answer a frequently asked question (FAQ). Here's one from Novell, Inc. customers: When will we have full access to NetWare services from Windows 95 desktops?

Not until November when Novell releases NetWare Client 32 for Windows 95, its 32-bit client software, says Michael Luchini, a CNE private contractor in the Worcester, Mass., area.

In the meantime, the pre-release version will be available free on Novell's NetWire forum on CompuServe starting Sept. 30.

Novell will also provide an automatic upgrade utility to migrate NetWare Client for DOS and Windows users to NetWare Client 32 for Windows 95.

For more details, point your Web browser at http://www.novell.com.

Assessing object-oriented management

By Chris Crowell

Developing applications that let an administrator easily manage a network and satisfy business expectations is becoming a difficult task given the growing complexity of corporate computer networks.

Object-oriented technologies can help alleviate the burden for management application developers, but interoperability among different vendors' software is needed to truly ease a network manager's job.

Object-oriented technologies let each component in a network, whether it be a LAN, router, client, server or even a database, be represented as an object. Taking the concept a step further, developers can target object interfaces at network management services, such as trouble ticketing, reporting, user policies, performance graphing and fault isolation.

So it comes as no surprise that software developers in general and network management providers in particular have been increasingly talking about the use of object-oriented technology. But they use the word object in such a variety of contexts — object-oriented programming languages, object-oriented methodologies, object-oriented databases, object models, object-based architectures and object request brokers, for example — that these discussions can become confusing.

All this talk may seem fairly new, but the heritage of object-oriented technologies in network management actually dates back to the original Open Systems Interconnection specifications, of which the Common Management Information Protocol standard is a part. However, OSI specifications have taken a long time to mature, opening the path for the takeoff of the non-object-oriented Simple Network Management Protocol.

Some network management vendors, including Cabletron Systems, Inc., NetLabs, Inc. and SunSoft, Inc., try to take advantage of both technologies by layering object-oriented technology on top of SNMP. As a result, network management platforms use the technology in a variety of ways, ranging from incorporation of objects at the screen level for dragging and dropping icons, to integration within a database for serious systems and network management.

Object grammar

The different approaches to object-oriented management may be confusing, but they are laudable nonetheless. Object-oriented analysis is potentially a powerful tool for translating a user's description of a problem into a helpful software application. It represents a natural way of thinking that maps closely to spoken language.

Developers can use objects to represent nouns for tangible devices such as hubs or more abstract entities like LANs in a user's problem description. They then can incorporate characteristics and actions — adjectives and verbs, respectively — associated with the nouns into their design. In this process, the complexity of the objects and the details of the interfaces are hidden so that a management application can deal with routers in general rather than be limited to working with a single device.

This makes for faster development targeted at real user needs, as well as easier adaptation and resilience to change. More importantly, objects can be combined and reused to create or enhance management applications, which in turn can be represented by objects to become building blocks for additional management applications.

Distributed objects

The boom in distributed computing and client/server architectures is expanding the need for more finely tuned management applications and services, as well as the use of object-oriented technologies. Because of the scalability inherent in both, object-oriented technology and distributed computing naturally complement each other. Distributed computing models let portions of an application, which can be represented by objects, reside on different servers.

The Object Management Group's work on the Common Object Request Broker Architecture (CORBA) and Microsoft Corp.'s efforts with its Object Link and Embedding (OLE) technology are rooted in distributed computing.

Distributed objects are software entities that can be seamlessly accessed and incorporated into applications regardless of their network locations. Each object can act as a server application, performing tasks for client applications. The object technology hides the communication details between the object's interface and the object server.

With this ease of integration, developers can build generic management services that can be layered to provide solutions to a wide range of system and network management problems. For example, an application spreadsheet could interact with a network management platform to provide a perspective on the cost of managing a network.

Distributed object technology in the management arena also becomes a requirement as user needs exceed the development capability of any one vendor and call for a mix of the best products. In order for this to occur, objects must be interoperable. In other words, a client built on top of one object technology must be able to use the services of an object built on top of another object technology.

These interoperability challenges are reflected in the standards discussions among vendors interested in both CORBA and OLE, which differ at many levels. While work is underway to resolve communication and interoperability blocks between the two, vendors are still far from plug-and-play management software in a distributed environment.

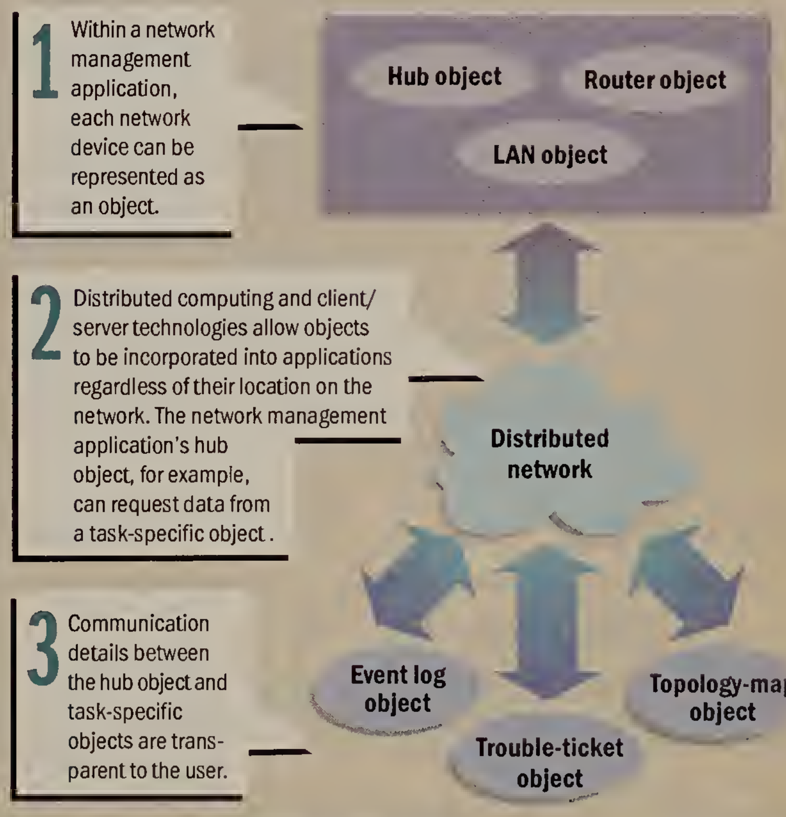
Standards should be developed in step with emerging solutions so that users can reap the benefits of having greater software choices. Users and vendors should work together to promote interoperability of umbrella management platforms, such as Cabletron's Spectrum, IBM's NetView and Hewlett-Packard Co.'s OpenView, at the object level. Vendors can then focus on differentiating at the application layer.

Crowell is Spectrum development manager at Cabletron Systems, Inc. of Rochester, N.H.

UP CLOSE

Objects in management

Object-oriented network management applications can use distributed objects to expand their processing capabilities.



1 Within a network management application, each network device can be represented as an object.

2 Distributed computing and client/server technologies allow objects to be incorporated into applications regardless of their location on the network. The network management application's hub object, for example, can request data from a task-specific object.

3 Communication details between the hub object and task-specific objects are transparent to the user.

EDITORIAL INSIGHTS

Cops on the beat

Forget telecom reform for a moment. It's budget time in Washington, and the rewrite of our communications laws is taking a backseat to a debate over funding for agencies overseeing communications policy.

If a Senate appropriations subcommittee has its way, the Federal Communications Commission's budget will be chopped by a third. And budget panels in both Houses plan dramatic cuts in the Commerce Department's technology programs, including abolition of the National Telecommunications and Information Administration (NTIA).

There's heated debate about all this, but I'm not sure why. The FCC is well established as the police department of the public network.

Nobody disputes this role — even the Republican reform bill passed by the House in August heaps a truckload of new work on the agency.

Several of Newt Gingrich's think tank friends have proposed jettisoning the FCC, but with the caveat that its key functions be shifted to a new office of communications policy. In effect, they're saying, "Let's come up with a new FCC, only don't make it a bureaucracy."

That's a cheap political argument. Given a choice between a network governed by a bureaucratic watchdog or one run by unfettered monopolies, I'll take the government agency dedicated to forcing more competition and lower rates for users, so long as it's properly funded to be effective.

By contrast, the NTIA is a classic case of sounds-nice government that simply can't be justified any longer. Except for a spectrum management function that can easily be transferred to another agency, the NTIA does little but issue superficial reports on the so-called information superhighway.

My bookshelf is groaning under the weight of these tomes, which contain little, if anything, that has affected you in any way.

Congress also should end the government IT pork fed out of the Commerce Department, the Energy Department and other agencies.

The U.S. is not exactly suffering from a lack of capital investment in information technology. And the government money tends to flow right where demand seems most questionable — ultrahigh bandwidth applications that remain commercially unproven.

The industry would be better off if we ended the taxpayer largesse and let the market determine the future of broadband networking.

David Rohde, Sr. Washington Correspondent drohde@nww.com

Teletoons

By Phil Frank and Joe Troise
guru@well.com

Oh, Wise One... my old uninstaller program keeps uninstalling my new uninstaller. What should I do?
Oh, man... that's a tough one..
CAN YOU STUMP THE GURU?

REALITY CHECK

Give up your cherished view of ATM as a high-speed technology

Thomas Nolle

With Asynchronous Transfer Mode technology, the traditional view is that faster is better. Now Sprint has announced T-1 ATM service, and General DataComm has been pushing the Frame User-to-Network Interface, which is a frame relay-based ATM interface that could make ATM deliverable at 56K bit/sec. What's happening here?

Reality is what's happening. For a couple of years, carriers and equipment vendors have been stumping up and down corporate America looking for companies to sell broadband to, and there haven't been all that many takers. There are maybe 1,800 prospects today for broadband carrier ATM services. If ATM is a revolution, it's a little one at that rate.

So now the industry is trying to popularize ATM by making it more consumable. The prevailing wisdom from the carriers is that cheap sells. Slow is cheap, therefore slow sells.

But should it? Is ATM useful at low rates? It depends on who you believed when you came up with your list of ATM-justifying applications.

ATM is a multiplexing technology, not a transmission technology, so 1.544M bit/sec isn't any faster just because it's done via ATM.

Basically, ATM had to be fast because it had to generate a lot of new revenue for the companies selling it. Because multimedia and video required higher bandwidth, carrier marketeers made the connection between multimedia and ATM to justify broadband ATM. The connection stuck.

Today, we're facing the reality that the business case for multimedia itself hasn't been proved, which makes multimedia a poor justifier for ATM. Tough as that truth is to many, the ultimate truth is tougher: There is no killer ATM application that justifies broadband. We can imagine all kinds of uses for ATM, but they have no proven value. No value, no justification. No justification, no ATM.

But the broadband view of ATM isn't necessarily the only view. If we forget the greed that drove the market to broadband in the first place, we can still find value in ATM as a better LAN technology, a better backbone technology and a better network architecture overall.

A few ATM-promoting vendors recently have been touting ATM as a way to reduce capital costs when building LANs and internetworks. ATM-based switching can build faster networks, they say, and less expensive ones, as well. Buy ATM not because it supports superfast video, but because it supports the usual crummy data applications better and more cheaply.

What vendors are trying to do is sell more ATM, which is a logical vendor goal. But selling more ATM may require a closer look at ATM's value proposition. A lot of what we've come to expect of ATM is really a function of broadband, not ATM.

Some classical ATM applications truly don't fit the less-than-broadband mold. For example, we can do video over T-1 ATM, but probably not any better than we could over Primary Rate ISDN, which is also a T-1 service. ATM is a multiplexing technology, not a transmission technology, so 1.544M bit/sec isn't any faster just because it's done via ATM. In fact, it may be slower because of ATM's overhead.

On the other hand, some classical data applications that didn't make much sense with broadband ATM fit the T-1 ATM service profile pretty well. It's these applications that many vendors now feel are the hook that will justify ATM. IBM, for example, has promoted its Switched Virtual Networking strategy based in part on the claim that ATM LAN switching is less expensive than routing. Newbridge Networks, Inc. and Bay Networks, Inc. made similar price comparisons even earlier, and both firms reached the same conclusion: LAN internetworking with ATM saves money.

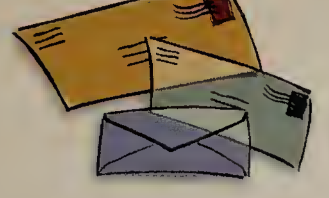
What low-speed ATM does is extend ATM-based networks to sites too small to participate in broadband networks. If the vendors who think ATM's value is in building fast and efficient LAN infrastructures are right, it follows that the value will be higher if the infrastructure we build is bigger. But if we can't afford to extend this new enterprise paradigm beyond the walls of the headquarters because wide-area costs are too high, then that isn't much of an infrastructure.

Ubiquity — not speed — is essential for ATM's success. Let's say that users propose to build applications that use ATM to the desktop. They forecast expanding those applications from the workgroup level to the department, but they stall when the application hits the carrier's point of service. Will any business really commit to such an application — one they can't extend to the branch, where the customers buy and the support is provided? Not in the real world. What stops them from extending ATM applications? Cost and stubbornness. Stubbornness in that we won't give up our cherished broadband ATM image.

Information flows create traffic. Applications create information flows. What goes on in those branches today won't change a whit just because some planning egghead puts a bunch of ATM hubs out there. If the branch communicates with headquarters at 128K bit/sec before ATM, it will communicate at pretty much the same speed afterward. Selling the user something that provides the information rate necessary at a cost that's affordable will make that ATM paradigm projectable enough to be universal. The data-justified ATM strategies that Bay Networks, IBM and Newbridge have proposed are a step in the right direction, but they're a baby step if we don't back these architectures up with an ATM service strategy that can be affordably extended to cover the majority of enterprise sites.

Take a stand! Fight ATM speed bigotry. If somebody tries to sell you 56K bit/sec ATM, don't sneer and demand OC-3, sneer and demand 9.6K bit/sec dial-up. ATM's only a step away, but we've got to slow down in order to speed up progress.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached by phone at (609) 753-0004 or via the Internet at tnolle@ix.netcom.com



IN-BOX

Tired of Novell excuses

Ever since the introduction of NetWare 4, Novell, Inc. has been touting its NetWare Directory Services (NDS). However, after three years on the market, Novell still doesn't have an adequate interface into NDS from DOS. As a developer of NetWare-compatible products, I am tired of having to tell my customers that bindery emulation is all the compatibility that I'm going to be able to support. So I want to put the blame where blame is due, and that's with Novell.

I have complained about the lack of a usable NDS API for the last three years. So far, all I have heard from Novell is either empty promises or that DOS is dead and no one runs DOS anymore. So I would like to remind Novell of a few realities.

First, Windows is a DOS program. So is Windows 95. Second, the NetWare shells NetX and VLM are DOS programs. Third, if DOS is dead, then please explain to your stockholders why Novell spent $80 million to buy Digital Research, Inc.'s version of DOS. Fourth, every other Novell service is available from DOS except NDS.

It's time for Novell to fix NDS. And I urge all NetWare 4 users to write Novell nasty letters and tell them that they are tired of having to run bindery emulation, because Novell makes it impossible for developers to upgrade their products to talk to a non-existent NDS API set.

Marc Perkel
President
Computer Tyme
Springfield, Mo.

Critical banking issue

Regarding your article "PC banking poised for resurrection" (Aug. 7, page 1), I don't think the critical issue is what type of software interface is going to be used to interact with the banks' systems, whether it be Intuit, Inc.'s Quicken, Microsoft Corp.'s Microsoft Money or MECA Software, Inc.'s Managing Your Money.

I think the critical issue will be the fees banks charge for on-line services. I recently inquired about Bank of America's on-line banking service. That bank was going to charge my account $24 per month for use of the on-line service, plus an $8-per-month service charge for the checking account.

I did not feel it was worth it. If Bank of America had been willing to waive the $8 charge, I would have considered using the on-line service. Or if it had a price in between, such as a $15 total charge, I would have signed up. Banks need to lower the fees as incentive to get customers to sign up.

Kevin Thomas
Consultant
Kevin Thomas Consulting
San Francisco

Putting products to the test

I was heartened to see Skip MacAskill and Melinda Le Baron's column "Putting vendors' testing programs to the test" (July 31, page 26).

As a supplier of testing products and services to networking vendors, my company has direct experience with the testing processes employed by vendors.

We are firmly convinced that the better a product is tested, the more profitable it will be for its manufacturer in the long run. Likewise, the more that purchasers find out about a company's testing processes, the greater the likelihood that they will buy reliable products.

One issue I would add to Le Baron's and MacAskill's list of key alpha-testing questions is how much negative testing does the vendor conduct?

Negative testing verifies that a product will operate correctly and robustly when connected with products that are malfunctioning or are nonconformant with protocools.

Negative testing is especially important in predicting reliability in multivendor, multiprotocol networks where the likelihood for things to go wrong is increased.

I would also encourage network end users to set up their own test environments to validate vendors' claims before making important purchases.

True, in-house testing does take some time and effort, but making a large network purchase without it is like buying a car without taking it for a test drive.

Hollie Schmidt
Marketing director
Midnight Networks, Inc.
Waltham, Mass.

Beg to differ

We enjoyed your article "NT scores big network win" (Aug. 7, page 1), but unfortunately, according to Union Carbide Corp. insiders, it is misleading. Perhaps the headline should have been "Unix scores big network win."

Unnamed sources working on the project within the company told us in a written statement:

"We not moving away from Unix — perhaps away from IBM's MVS, VM, AS/400, S36 or RS/6000, Digital Equipment Corp.'s VMS, as well as Prime Computer, Inc. and Wang Laboratories, Inc. systems — but not Unix. Yes, we are tossing out all our old networks and replacing them with Microsoft Corp.'s Windows NT, but we're not running the corporate mission-critical applications on them. They only do file service, print service, E-mail and visual-voice mail.

"On the corporate application side, all apps (except process control) will move to SAP North America, Inc. (R3-client-server) or its alliance partners. The server side will not be the Windows NT boxes but large Hewlett-Packard Co. boxes running Unix. Network management will be via IBM's OpenView."

Obviously, your story was influenced by the self-touting of Vanstar, Inc. They may have presented a one-sided view because of their ties to Microsoft. Union Carbide is very wisely not putting all its eggs in the Windows NT basket.

Sadhunathan Nadesan
Chief operating officer, software division
Cast & Crew Payroll, Inc.
San Diego

What's in a name?

David Buerger's Back to Reality column about Internet naming (Aug. 7, page 59) missed some important considerations. There are U.S.-centric sites that extend outside of U.S. borders for historical reasons.The rest of the world uses ISO 3166 two-letter codes except for the U.K. Its two-letter code is GB.

If we do away with the COM domain, we will need to allow companies the opportunity to choose their domains. Zinc.com would probably become zinc.software.

What about the larger companies? Hewlett-Packard Co. may have to become hp.computers, hp.instruments, hp.software and hp.computerized—instruments. Maybe IBM would just have to become ibm.monolith.

Microsoft could show its true goals and call itself microsof.all (note the 8.3 naming scheme). We could also create domains for individuals and families (since none yet exist).

My home network could be named brad—davis.hacker or davis.wiredfor—isdn. This would allow Bill Gates to finally get a domain fitting of his worldview: Bill.god.

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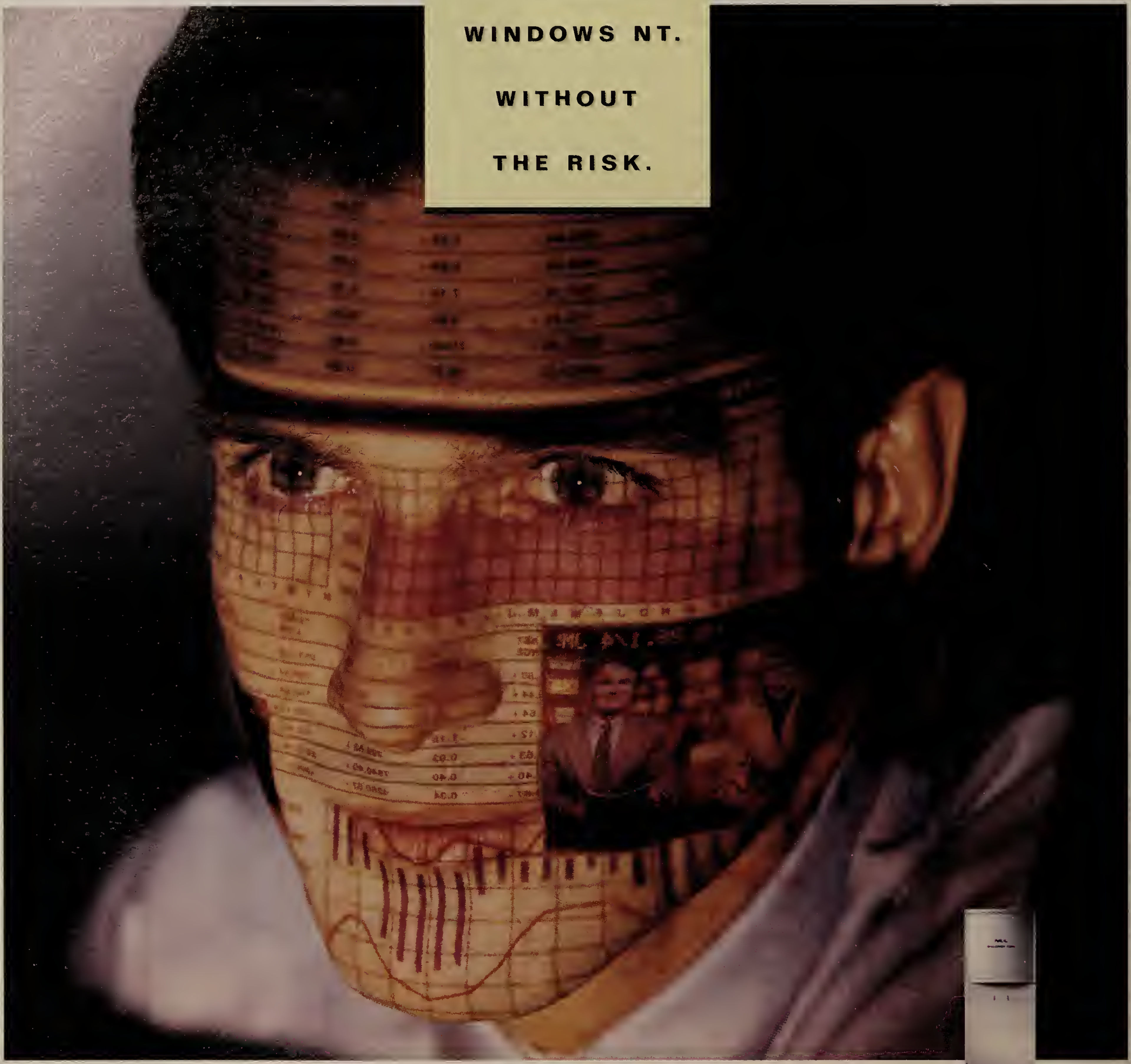

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Buyer's Guide

With specialized wireless data services still on the horizon, your decision is

Up in the • air

JERRY BLANK

By Mark Langner and Tom Brennan

As you search for the wireless data promised land, you better get accustomed to hearing antsy end users chirping the traveler's eternal question: Are we there yet?

While some specialized wireless data services, including long-standing packet radio offerings from ARDIS Co. and RAM Mobile Data, are indeed available today, many more are only just emerging.

SkyTel, for example, this month is hitting the airwaves with a two-way mobile paging service that will enable users to exchange short text messages. Enhanced specialized mobile radio (ESMR), which makes it possible to send data over two-way voice radio links, is also just emerging.

Other carriers, however, demonstrate a continued lack of marketplace punctuality and won't have service widely available for six to 12 months.

In still other cases, carriers are bagging service plans altogether, as evidenced by the failure of AirTouch Communications to offer a Cellular Digital Packet Data (CDPD) service when its trial ended recently.

Even some big-name players such as Sprint Corp. and MCI Communications Corp. remain absent from this fledging market. Sprint does have a wireless subsidiary pitching cellular voice services, but it declined to participate in this Buyer's Guide and is reportedly focusing efforts on personal communications services instead. MCI has no wireless network of its own, choosing instead to resell cellular voice capacity provided by other carriers after MCI abandoned its bid last year to acquire Nextel Communications, Inc. (*NW*, Aug. 14, page 15).

AT&T, however, is playing a big role in CDPD. Just last week, it officially renamed the McCaw Cellular Communications, Inc. company it purchased to AT&T Wireless Services and rolled out its Wireless Packet Data Service.

The key to picking a service today then is to sift through the piles of acronyms and buzzwords to determine which of the existing or promised services are best suited to handle the data you want to send skyward.

What are we talking about?

As you dive into this market, we need to make one thing clear. We're focusing here on specialized wireless data services that are mostly packet-based — they should not be confused with services that send data over circuit-switched cellular links. However, there is often a relationship between the two methods.

Much of the technology used to support wireless data applications has centered around using the existing cellular infrastructure, which was designed primarily for voice. Even though you can attach a modem to a cellular phone and send data, doing so doesn't always match your application requirements.

"You can service a number of data needs with regular cellular service, just like you can serve a number of data needs with a plain old telephone line and a modem," says Tom Walton, president of Walton and Walton Associates, a consultancy in Richmond, Va. (see story, page 52).

"But in both cases, sometimes that's like filling a swimming pool with a teaspoon. It will work, but it may not be the best way to do it," he adds.

Among the alternatives to circuit-switched cellular is CDPD, which seems to be the one drawing the most attention today. Then there are packet radio services, two-way paging and ESMR.

Even though each option uses a different technology, there are some universal issues to consider. For instance, you cannot talk to a player in this market without discussing coverage since many only operate in specific regions. Then you have to build the business case for investing in the technology, making sure the service will pay for itself through increased productivity or profits.

The CDPD debate rages

Many users today are looking first at CDPD. Since development of the CDPD standard in 1993, it has been held out as the savior to the underserved wireless world and the one service capable of supporting applications that are poorly suited

Continued on page 50

GLOSSARY of TERMS

Cellular Digital Packet Data: A protocol that enables users to stuff data packets into air space not being used for voice traffic on existing cellular networks.

Packet radio: A service that uses specialized assemblers/disassemblers and switches to transmit specially addressed packets.

Enhanced specialized mobile radio: Provides a way to send data over existing two-way voice radio channels.

Two-way paging: A service that provides users with an alphanumeric pager to respond to a message or question by choosing an option displayed on-screen.

Continued from page 49

to circuit-switched cellular networking.

CDPD enables IP-based data to traverse existing cellular network infrastructures. Data is divided into small packets, which are sent in the air space between voice channels.

But alas, the doubters remain. CDPD detractors say the service may not be able to handle throughput greater than 19.2K bit/sec and that the cost of the associated hardware and software is still too high.

CDPD is tailored to applications with short bursts of traffic, such as point-of-sale credit card validation or dispatch operations.

The standard also borrows TCP/IP addressing schemes to identify end-user devices. For instance, a device in a CDPD network is assigned a unique mobile IP address.

CDPD is accessed using a transmitter and receiver in end-user devices such as a laptop, POS terminal or even a vending machine that can automatically alert central-site staff when its stock gets low.

These units communicate with a base station located within a cell site. The base station forwards packets over the air waves at up to 56K bit/sec to a centralized device that looks at the addresses and routes them to the base station capable of passing them off to the intended receiver.

"With CDPD, we look like a TCP/IP network," says Russ Brankley, product manager for wireless data at Bell Atlantic NYNEX Mobile. "If you take a TCP/IP application, it will run over a CDPD network without modification."

However, porting just any TCP/IP application to run in a CDPD environment can be unwise because they can generate a large number of packets — and the majority of CDPD providers charge on a per-packet basis.

NO ROAMING

Bell Atlantic NYNEX Mobile is the only company listed in the Buyer's Guide chart above that does not allow roaming. AT&T Wireless Services says roaming does not apply to its Wireless Packet Data Service.

"The problem is that many application developers understandably design their products as if there was a 10M bit/sec Ethernet behind them," Brankley says.

"These applications are very 'chatty,' which is not efficient when you are paying for packets. They must be tuned to consume less bandwidth to be effective in a wireless environment," Brankley adds.

One firm that has quickly learned how a well-tuned CDPD application can drive revenue growth is FirstNet, a Dallas-based provider of the AireTrans transaction processing service.

"CDPD provides our customers the ability to put sales terminals where they make sense and adds a level of security needed to safely perform financial transactions," says Elizabeth Hubbard, FirstNet's CDPD project manager.

CDPD's security comes in two forms that are not available in the standard cellular environment. These include a sequence number and a randomly generated personal identification number. These measures make it far more difficult to hack a CDPD channel than a regular cellular one. Additionally, CDPD encrypts the data it sends.

The ability to freely roam about with the terminal device and provide air link security are two issues that have dogged circuit-switched cellular data transmissions. Because CDPD was designed after the circuit-switched cellular standards used today, service designers were able to address these issues from the outset.

In fact, CDPD users do not roam among distinct service areas; they visit.

CDPD was designed with an automatic registration/authentication process, which ensures devices that are moving from one cellular service area to another automatically send their mobile IP address to the nearest base station.

The base station then essentially updates the central routing unit with the device's new whereabouts.

But it's up to CDPD providers to negotiate billing and accounting procedures that are associated with visiting. You won't be able to visit unless the carriers involved have agreements in place, and those agreements have to be made on a case-by-case basis.

Even with all of CDPD's apparent pluses, the service has yet to fulfill its promise.

While some providers are aggressively marketing CDPD — Bell Atlantic NYNEX Mobile already has 75% coverage in 10 of its top 25 markets — many others are not.

"With CDPD, we are in a chicken-and-egg situation," says Rhonda Jobe, manager of wireless data services for US WEST NewVector Group, Inc., which does not yet offer CDPD. "If the customers show demand for CDPD, we will consider providing it."

Southwestern Bell Mobile Systems has much the same mind-set.

"We're watching the market and the technology," says Doug Berg, director of data services. To date, however, the carrier has yet to announce any CDPD service trials.

This chicken-and-egg analogy can carry over into implementation cycles in the areas where CDPD is provided. Ameritech has experienced a nine- to 18-month cycle for CDPD services, which it now offers in Chicago and Detroit with a St. Louis launch imminent.

"When implementing a CDPD application, you are really talking about getting into the customer's business systems — their critical path," says Brian Balduf, Ameritech's product manager of enhanced data services.

For this reason, Ameritech encourages customers to spend 60% to 70% of their presubscription time planning for the service rather than just jumping to implementation.

With coverage and application issues still high on the list of concerns, the success of CDPD as a national option for enterprise-wide users is still unclear.

Users considering CDPD should contain its use to local or regional sites running applications that have been tuned for

Continued on page 52

Specialized wireless data network services

Company	Service	Service type	Frequency (MHz)	Max. speed	Protocol support	Service area	Air link security	Usage type: Monthly fee	Measured service unit			Measured overage	Discount
			D = Downlink U = Uplink	Bit/sec	S = SNA T = TCP/IP X = X.25 O = Other	M = Metropolitan only R = Regional only U = U.S.	E = Encryption F = Frequency/channel hopping S = Scrambling O = Other	M = Measured U = Unlimited	Bits covered by monthly fee	Packets covered by monthly fee	Max. packet size (bits)	Amount/Increment	T = Term V = Volume
ARDIS Co. (800) 662-5328	ARDIS	Packet radio	D: 851-866 U: 806-821	4.8K, 19.2K	S, X, O	U	E, F, O	M: $19.95 U: $75		100	240	$.36/ Packet	V
AT&T Wireless Services (206) 803-4000	Wireless Packet Data Service	CDPD	D: 800 U: 800	19.2K	T, O	M	E, F, O	M: $15-$50+	400-4K+			$.01-$.02/ 1K bit	T, V
Bell Atlantic NYNEX Mobile (800) 255-2355	Air Bridge Packet	CDPD	Existing cellular channels	19.2K	T	R	E, F	M: $15-$120	ICB			ICB	V
GTE Mobilnet, Inc. (800) 483-6625	Wireless Data Services	CDPD (1)	D: 835-845 U: 880-890	19.2K	T, X	M	E, F, O	M: $15-$79	400-4.8K			$.11-$.19/ 8K bits	T, V
Metricom (800) 556-6123	Ricochet	Packet radio	D: 902-928 U: 902-928	28.8K	T	M	F	U: $29.95					
Nextel Communications, Inc. (800) 639-8359	Nextel Communications	ESMR	D: 851-866 U: 806-821	(2)	(3)	R	(4)	M: $5			1.12K	$.05/ Message	V
RAM Mobile Data (800) 726-3210	RAM Mobile Data	Mobitex	D: 935-940 U: 896-901	8K	S, T, X, O	U	F, S, O	M: $25 U: $135	100		512	$.35/1K bit	T, V
SkyTel (800) 456-3333	SkyTel 2-Way	Narrowband PCS	D: 940 U: 905	26.5K	(3)	U	E	(5)	(5)	(5)	(5)	(5)	(5)

Products highlighted by color were selected for the Short List.

Chart compiled by Kathy Scott

Footnotes:
(1) This service also includes PCS.
(2) This service provides one-way, 140-character messages with acknowledgment.
(3) These services use Telocator Alphanumeric Paging Protocol.
(4) This service uses Integrated Dispatch Enhanced Network technology.
(5) Pricing information was not available at time of publication.

Editor's note:
Ameritech Cellular Services could not provide information by deadline.

CDPD = Cellular Digital Packet Data
ESMR = Enhanced specialized mobile radio
ICB = Individual case basis
PCS = Personal communications services

NetworkWorld Short LIST

Specialized wireless data services

The Short List highlights offerings Network World *recommends you examine when buying specialized wireless data services. In a market that does not yet have an all-encompassing service, the list of alternatives worthy of close scrutiny is very short indeed. We have isolated two companies that demonstrate they have the commitments, service availability and coverage needed to establish them as leaders in this emerging market by meeting the needs of users with multivendor enterprise networks. Your criteria may differ.*

ARDIS Co. has the veteran service. No other service has been around as long as ARDIS or has as much coverage worldwide. The company is kicking top speed up to 19.2K bit/sec, which matches Cellular Digital Packet Data (CDPD) service. ARDIS also offers measured and unlimited service pricing. The service is most attractive to customers with small packets that require quick transaction time.

Bell Atlantic NYNEX Mobile is one of the biggest CDPD backers out there with its **Air Bridge Packet** offering. Bell Atlantic and NYNEX joined together to spread CDPD across a wide area in the Northeast. In fact, the joint venture has CDPD covering more than 75% of the area in 10 of its top 25 markets and plans to have full deployment, including areas in NYNEX territory, by the end of 1996. Although service is priced on a measured unit basis, the venture is willing to negotiate the amount of traffic covered by the $15 to $120 monthly fee.

"I fax. Then I stop. Then I go back on the network. Then stop. Then get off the network. Then stop again. Excuse me, but can I tell you what's got to stop?"

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Circuit-switched cellular acts as a wireless alternative

Circuit-switched cellular is arguably the most accessible wireless data service and the one that is heavily promoted by several major service providers.

"We feel that circuit-switched cellular is the best option for wireless data today," says Rhonda Jobe, manager of wireless data for US WEST NewVector Group, Inc.

Circuit-switched cellular offers a better price point as well as more equipment and application options than specialized wireless data services, Jobe contends. She may have a point because many vendors today offer the cellular modems needed to zap data across wireless circuits. And similar to how modems work over dial-up analog circuits, most applications work without modification on circuit-switched cellular links.

The biggest strength of circuit-switched cellular data is its geographic coverage. Equipped with a cellular phone and modem, users can access service practically anywhere in the U.S.

Of course, circuit-switched cellular data users are not exempt from some of the vagaries that affect voice cellular users, such as the high usage cost, expensive roaming and long-distance fees, and varying levels of link quality.

Also, the per-minute billing nature of most cellular plans makes circuit-switched service expensive for transmissions that last less than a minute or go beyond a minute in length by some small fraction. Many of these applications are better supported by packet-based services.

Some cellular service providers are combating this disadvantage by offering special pricing for calls that last a short time, such as the ones normally used to dispatch a field service technician to a customer site.

Despite some shortcomings, circuit-switched cellular fills a need. Given the spotty coverage and limited choices in the specialized wireless data market, circuit-switched cellular data should definitely be considered for any customer's quiver of wireless data options.

Continued from page 50

CDPD's bandwidth limits and usage-based pricing.

The veteran players

If you'd rather have a more mature and widespread offering, look into packet radio. IBM gave this service a big push in 1984 when it equipped field service technicians with wireless data devices.

The outgrowth of this effort was ARDIS, which last December became a wholly owned and independently operated subsidiary of Motorola, Inc.

ARDIS currently serves more than 400 metropolitan areas in the U.S., Puerto Rico, the U.S. Virgin Islands and seven other countries through affiliated network operators.

ARDIS can attain throughput of up to 19.2K bit/sec by utilizing Motorola's Datatac wireless net infrastructure. The company has focused its efforts to date primarily on vertical markets such as field service operations, parking enforcement and alarm monitoring, all of which sport applications with small packets that require quick transaction time.

Currently, the market is limited by the high cost of the proprietary modem-like devices required to access the ARDIS net.

"The continuing trend towards lower priced Type 2 PCMCIA cards is going to go a long way towards expanding the horizontal markets for this type of service at a good price," says Rob Euler, senior vice president at the service provider.

ARDIS hopes to replace the bulky, expensive hardware it requires today with smaller and less expensive Type 2 PCMCIA cards.

RAM Mobile's market offerings are similar in many ways to ARDIS'. But the company declined an interview for this Buyer's Guide.

Metricom is another packet radio provider that is looking to break out of its traditional niche — wireless data acquisition for the utility industry.

The company's Ricochet network enables wireless modems in such devices as laptops to bounce data off radio units attached to utility poles spaced every 25 meters. Data hops from pole to pole until it reaches a unit that has a wired link into a frame relay network, which sends it on its way to the destination.

Currently available in the San Francisco Bay area, at 11 separate universities and on selected corporate campuses, Ricochet is designed for use with laptops rather than specialized end-user devices.

Plug a Ricochet wireless modem into your laptop and you're on the air.

Metricom is currently pursuing rights-of-way to attach its units on poles in the top 25 U.S. metropolitan areas and expects to eventually cover at least the top 50.

Providing throughput up to 28.8K bit/sec, Metricom offers unlimited usage for $29.95 per month, an attractive rate — especially if the service is used for Internet access and other high-volume data movement applications. But access to the network remains the biggest obstacle because it is only available in limited areas.

Adventurous future

Meanwhile, SkyTel is launching a two-way paging service, called SkyTel 2-Way, which enables users with small, unobtrusive devices to send and receive brief text messages of about 200 characters each without attachments.

SkyTel 2-Way will use Motorola's ReFLEX network protocol, which enables users to respond to questions displayed on an alphanumeric pager.

The paging party will be able to send messages by calling a SkyTel operator who will help phrase the question and send it from a SkyTel terminal or, in the future, through electronic mail gateways. The paged party will see the question displayed on the pager and use the arrow keys to answer "Yes", "No" or select a response from a multiple choice list.

SkyTel 2-Way will store messages if the receiving pager is turned off or is out of a coverage area. Messages are transmitted when the paging device is back on-line.

SkyTel provides service in more than 250 metropolitan areas and has nationwide coverage as its goal.

If you are willing to hold out a little longer, the ESMR market is just emerging. Nextel, which was bought by Craig McCaw of McCaw Cellular Communications, Inc. fame after MCI withdrew its bid, is working furiously to expand its market coverage and enhance its service portfolio. The firm plans to release a circuit-switched data service that will operate over two-way radio channels by the end of this year and packet data options by early 1997, according to John Caner, Nextel's director of wireless data development.

Nextel intends to integrate voice and data into a single end-user device. With the device, users will be able to send messages of up to 140 characters over the same frequencies used for two-way voice. Trucking companies and taxi outfits with large investments in two-way radio or users simply needing to send short messages may find ESMR attractive.

Waiting for an emerging technology such as ESMR can be an adventure, but so is looking for advanced forms of life in the marketplace. In some cases, you can see movement on the horizon, such as with CDPD services, depending on your location.

Signs of activity in two-way paging services are further off, while those for packet radio are only visible to certain users.

In all cases, the development work is fast and furious, and the key is to stay on top of the progress to keep corporate productivity humming and the natives in the end-user community from getting too restless.

Langner and Brennan are senior consultants at TeleChoice, Inc., a telecommunications market consultancy in Verona, N.J. They can be reached via the Internet at tom_brennan@telechoice.com or mark_langner@telechoice.com, or by phone at (201) 239-0700.

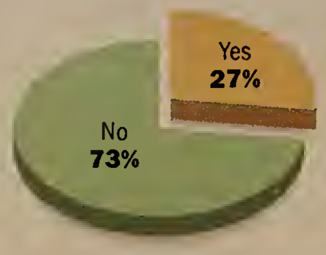
BILL ME

All the companies listed in the Buyer's Guide chart on page 50 provide consolidated billing, which lists charges for nationwide usage in a single bill.

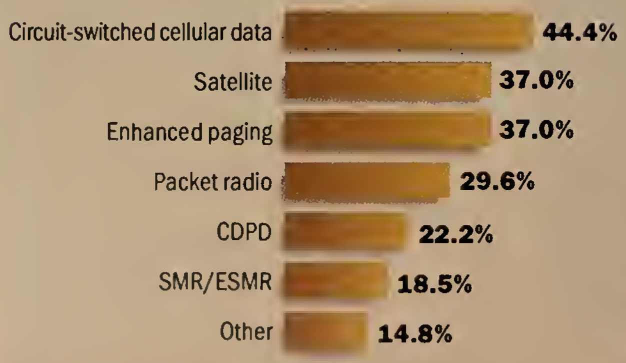
Reader views on specialized wireless data services

Based on 100 interviews.

Do you currently use wireless data services?

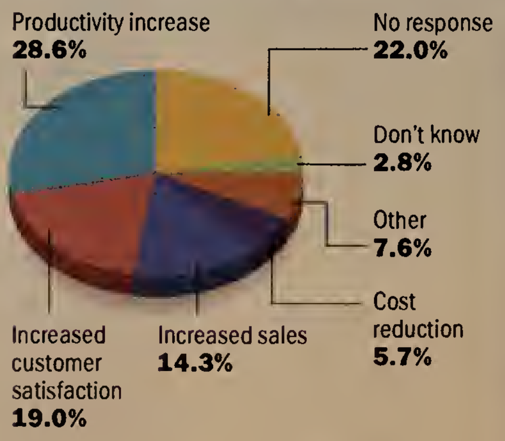


What type of wireless data services do you use?
(Based on 27 responses)



SMR = Specialized mobile radio
ESMR = Enhanced SMR

Why did/will you use wireless data services?



Focus Data, an independent market research firm in Framingham, Mass., conducted this survey. Focus Data specializes in gathering primary data from end-user organizations regarding their enterprise network environment and needs. For more information about Focus Data services, send E-mail via the Internet to mdabbon@focusdata.ultranet.com or call Mona Dabbon at (508) 626-2556.

What is the biggest advantage/disadvantage of CDPD service?

	Advantage	Disadvantage
Dedicated wireless data service	20%	NA
Service cost	17%	34%
Equipment/ application cost	2%	10%
Speed	24%	28%
Packet-based transmission	13%	7%
Other	15%	15%
Don't know	9%	6%
Total	100%	100%

NA = Not asked

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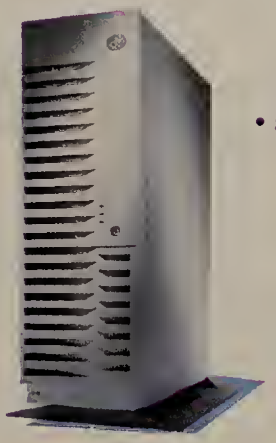

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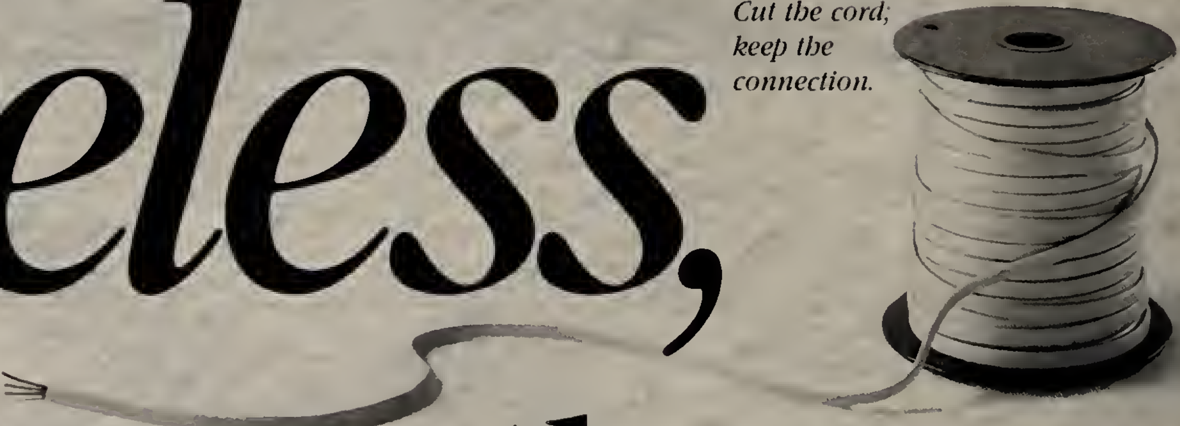
[1] Second Pentium chip sold separately. [2] Some hardware/software configurations may be necessary. [3] In Canada, call IBM's HelpFax at 1 800 465-3299 (ask for document # 45200). IBM and SystemView are registered trademarks and NetFinity and "There is a difference" are trademarks of International Business Machines Corporation. Pentium is a registered trademark of Intel Corp ©1995 IBM Corporation.

Be reachable in unreachable places.

Before you *go* *wireless,* make *sure* there are *strings* attached.



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NetworkWorld Review

NetworkWorld TEST ALLIANCE
NOS review series — Part II —

Under the Banyan tree

By John Allen, Tony Croes, Howard Marks and Josh Penrod

Once an innovator, today VINES is just keeping pace.

Banyan Systems, Inc. has won a fiercely loyal customer base with a network operating system (NOS) that was ahead of its time for many years. VINES was the first NOS, and for many years, the only one with an integrated directory service — VINES' biggest claim to fame.

Today, Novell, Inc. and Microsoft Corp. have largely caught up with Banyan's technology.

However, Banyan is once again challenging the larger companies by unbundling its network services and selling them for other platforms. Banyan's Enterprise Network Services (ENS) are designed to tie together networks based on disparate hardware platforms. It's an innovative tack and one that the other companies are making noise about following.

We looked at the latest release of VINES, Version 6.0, concentrating on its directory, messaging and management services. We found StreetTalk to be a robust, extensible directory service that is highly integrated with other NOS services and Intelligent Messaging to be highly functional despite its reliance on a shared-file/directory architecture. But Banyan's management utilities, while in transition to a new architecture, fail to address crucial user management functions that would help troubleshoot client-related problems without having to physically visit the client — functions that both Novell's ManageWise and Microsoft's Systems Management Server (SMS) contain.

Banyan VINES StreetTalk III

The third generation of Banyan's StreetTalk directory service adds a couple of new twists, but its base is the same top-notch directory service that has carried Banyan for more than 10 years.

Since the StreetTalk database is integrated with just about every part of a Banyan VINES network, network administration is easy. Every service and user on the network is assigned a StreetTalk name, and all are assigned to a group and an organization. Unlike Novell's NetWare Directory Services (NDS), StreetTalk has a fixed number of levels in its database. StreetTalk names comprise three parts: item, group and organization, in the format item@group@organization, with the @ characters acting as separators.

While StreetTalk lacks the flexibility of NDS' many levels, most organizations can work within the constraints of Banyan's three-level scheme.

It's well documented that StreetTalk III is extremely scalable, so we did not test its support of thousands of file servers and tens of thousands of users this time around. We've worked at organizations with several hundred servers, so we're satisfied that StreetTalk is up to that task.

With the 6.0 release, Banyan has added a measure of fault tolerance to StreetTalk III. You can now shadow groups on other servers, so if a server that contains a given user's logon group is down, that user is still able to log on to the network using one of the group's shadows. Banyan calls this StreetTalk Guaranteed Login.

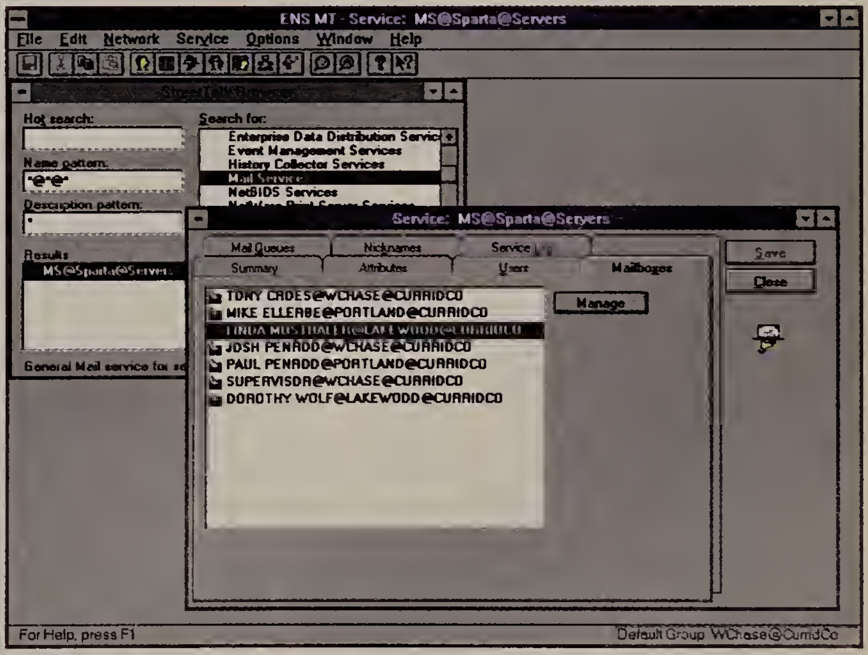
StreetTalk comes with a predefined set of common attributes for the objects in its database, but Banyan has provided the tools necessary to extend this using DOS-based utilities and a set of APIs. However, we could not find a way to add to the predefined list of attributes from the Windows interface.

The StreetTalk III database is tightly integrated with Banyan's messaging architecture. Logon IDs and E-mail addresses are one and the same, as all Banyan network services use StreetTalk to validate users.

While Banyan has publicly stated that it will support the X.500 standard with its StreetTalk database, it looks like it still has a ways to go. Browsing through the attribute list for objects reveals several X.500 entries, but StreetTalk's three-part naming scheme requires some sort of mapping to address the X.500 name space.

Intelligent Messaging III

Banyan's messaging system, like StreetTalk, was designed from inception to facilitate mail and messaging in enterprise environments. The current incarnation, Intelligent Messaging III (IM3), features integrated StreetTalk directory services and intelligent message routing to reduce the overall cost of the messaging system. Yet despite impressive enterprise-level functionality, Intelligent Messaging remains a shared-file/directory, not shared-client/server, implementation.



Name pattern: *e*e*

Description pattern: *

Results: MS@Sparta@Servers

TONY CROES@WCHASE@CURRIDCO
MIKE ELLERBE@PORTLAND@CURRIDCO
LINDA MUSTHALER@LAKEWOOD@CURRIDCO
JOSH PENROD@WCHASE@CURRIDCO
PAUL PENROD@PORTLAND@CURRIDCO
SUPERVISOR@WCHASE@CURRIDCO
DOROTHY WOLF@LAKEWOOD@CURRIDCO

Figure 1: *ENS MT provides Windows-based tools for managing the network.*

Shared-file systems have several problems. They are difficult to manage — with many files containing messages and status information, it's difficult to know what's current if the system goes down and whether all components are backed up successfully, for example.

A client/server-based system tracks exactly what happens to messages as they move from the sender to recipient. If built on industry-standard database platforms, it also has database agent technology to ensure secure backups while the system in online. There is a current trend in the industry to move to client/server message stores — Lotus Communications Server, Microsoft Exchange Server and Novell's GroupWise XTD are among them.

As part of its Redwood initiative (see story, page 56), Banyan is reportedly working to add stronger workflow and rules processing to Intelligent Messaging, but the company is still unsure whether it intends to migrate to a

Continued on page 56

NetResults

Product
VINES 6.0

Vendor
Banyan Systems, Inc.
120 Flanders Road
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(508) 898-1000
Fax: (508) 898-1755
URL: http://www.banyan.com

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100-user license: $9,995
250-user license: $14,995
500-user license: $27,995
1,000-user license: $49,995
Intelligent Messaging III: $1,495
SNMP Server Agent: $1,295
OutLook for HP OpenView: $1,995

Key findings
- Includes robust hierarchical StreetTalk directory service.
- Messaging architecture depends on shared files and directories.
- DOS-based server management tools are klunky, but Windows-based ENS MT provides a good, intuitive management interface.
- DeMarc management tools provide good SNMP management but lack any user/desktop management features.
- BeyondMail messaging client offers client-based rules processing and other slick features.
- Dongle-based license management is primitive and annoying.

Continued from page 55

true client/server back-end message store.

When you purchase Intelligent Messaging at the same time as VINES, it is installed and enabled automatically during server installation. You must use an activation key shipped with IM3 to enable Intelligent Messaging when it is installed as an add-on service.

The fact that IM3 is not automatically bundled with VINES is a shame; we believe that no state-of-the-art NOS should fail to include an integrated messaging service. Still, of the major NOS vendors, only Novell provides a messaging transport with the base product. Microsoft still provides only a client.

To make the mail service available to users, you simply grant access to the VINES shared volume where the messaging applications reside, and add a SETMAIL command to user profiles. Doing this for multiple users is easy; the administrator only needs to modify a single profile for mail services and have all users on the same server use this profile.

The SETMAIL command determines which mail service a user connects to when logging on and running an Intelligent Messaging-aware application such as Banyan Mail or BeyondMail. Since Banyan and StreetTalk are network-centric rather than server-centric, it does not matter which server users get their mail service from. However, as a rule of thumb, users should access mail services on servers in close proximity and on servers that are not heavily loaded.

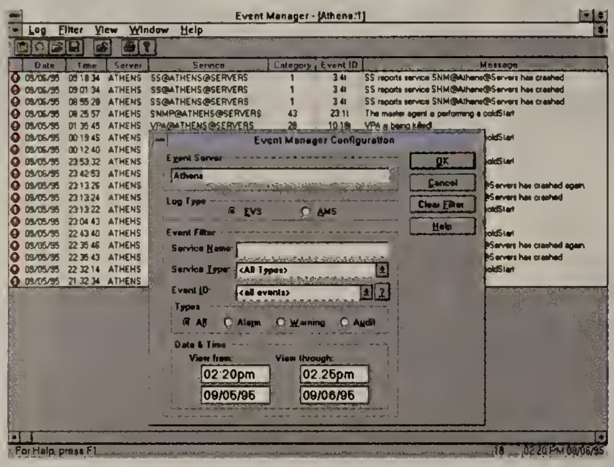
Managing messaging

Administrators have a good deal of control over messaging with IM3. Using the MANAGE utility, you can configure watermarks or size limits to determine when messages are automatically compressed before transmission, set expiration times that determine when a message is automatically deleted, set limits on mailbox sizes (when an incoming message makes the mailbox exceed the size limit, the message is returned to the sender with an error message), and set up the janitor, which performs cleanup operations on users' wastebasket folders. You can configure settings globally for the messaging server or individual mailboxes.

The MANAGE utility works fairly well with messaging. It provides a good deal of control over the number of messages, size, expiration times, wild cards for sending and receiving, and cleanup. You can even relocate a service and its data to another server. However, DOS-based messaging management tools, such as MANAGE and MMAIL, look the same as other tools for services in VINES, and that's not good. The tools do nothing to guide an administrator about how to manage a particular service. You must know explicitly what modifying an attribute or changing a setting will do — without the benefit of context-sensitive on-line help.

Other beneficial features of IM3 include the ability to set a limit on the number of messages permitted in a mailbox, redirect mail to other mailboxes in someone's absence and control the use of wild cards in message addressing. In larger networks, this last feature is quite useful, since without it, users can send messages to everyone on the WAN by addressing them to *@*@*.

Finally, like most messaging systems, Intelligent Messaging provides support for priorities and service levels. The IM3 message transport is designed around multiple priority message queues (different directory structures on the server) and is multithreaded, meaning it has the ability to continue to deliver messages while working to resolve addressing on distribution lists and hard-to-deliver messages.



Event Manager - [Athens:1]
Log Filter View Window Help
Event Manager Configuration
OK
Cancel
Clear Filter
Help

```
Date      Time      Server  Service               Category  Event ID  Message
09/06/95  09 18 34  ATHENS  SS@ATHENS@SERVERS     1         3 41      SS reports service SNM@Athens@Servers has crashed
09/06/95  09 01 34  ATHENS  SS@ATHENS@SERVERS     1         3 41      SS reports service SNM@Athens@Servers has crashed
09/06/95  08 55 28  ATHENS  SS@ATHENS@SERVERS     1         3 41      SS reports service SNM@Athens@Servers has crashed
09/06/95  08 25 57  ATHENS  SNMP@ATHENS@SERVERS   43        23 11     The master agent is performing a coldStart
09/05/95  01 35 45  ATHENS  VPA@ATHENS@SERVERS    29        10 19     VPA is being killed

Event Server: Athens
Log Type:  ● EVS   ○ AMS
Event Filter
  Service Name:
  Service Type: <All Types>
  Event ID: <all events>
  Types:  ● All  ○ Alarm  ○ Warning  ○ Audit
Date & Time
  View from:  02:20pm   09/05/95
  View through:  02:25pm   09/06/95

For Help, press F1                                        18    02:20 PM 09/06/95
```

Figure 2: *Event Manager allows administrators to access lists of network events. Lists can be filtered by time, type, service name or security.*

The degree of control administrators can have over individual messaging users under Intelligent Messaging can be as lenient or strict as desired — up to and including the ability to read individual users' messages.

There are a few ways to manage user mailboxes: through MMAIL, the DOS-based mail management utility and through the Windows-based ENS Management Tools (MT) (see Figure 1, page 55). The latter is definitely preferable since the interface is intuitive and all the messaging features can be managed from a single workstation. The VINES DOS utilities are cumbersome, the keystrokes are unnatural, and you must go through many screens to get to information you want.

ENS MT uses StreetTalk to display different Banyan services, including mail services. When an administrator selects a mail service, a window appears that allows the person to manage mail queues, nicknames, service attributes, users and mailboxes. Selecting a mailbox allows an administrator to manage and display statistics for folders and messages in that mailbox.

Despite an intuitive tabbed display for editing objects, ENS MT is a little disappointing. Resizing some of the child windows within the program does not resize the controls. The list box for objects is much too small, as we could only show five objects at a time, which is inadequate when trying to browse through a list of a couple of hundred users.

ENS MT does have a good search engine, though, which can be used to cut down the number of entries you need to browse in a search box.

Intelligent mail clients

Intelligent Messaging installs a DOS-based Banyan Mail client to a directory on the server, but it's rather obtuse.

While it supports the global StreetTalk address book and features such as message attachments, it's not the most user-friendly application avail-

Continued on page 58

Among the Redwoods

Project Redwood is a strategic plan for VINES that's to be implemented in phases during the next three years. Redwood has three thrusts: Business on Mail, Self-Managing Networks and Click to Information.

Intelligent Messaging III and BeyondMail's rules capabilities serve as the basis for Business on Mail, which is intended to facilitate, among other things, the development of applications that include workflow and mail-based front ends for client/server databases.

Banyan Systems, Inc. will employ its DeMarc architecture to address Self-Managing Networks by deploying distributed agents on servers to automate routine labor-intensive management tasks.

Click to Information leverages the Banyan StreetTalk database as a repository of information about network objects. It aims to provide an all-encompassing directory of network services and resources.

Banyan has taken a radical step and opened up StreetTalk for use by other parties. The firm's Universal StreetTalk initiative is intended to allow third-party developers to use the StreetTalk database, with tools given free of charge to developers.

Eight things to look for in a directory service

When you want to order a pizza, you pull out the Yellow Pages. You look under the pizza heading, find the company's name, then move to the right to find its phone number. That's just the way a directory service works on a network — the pizza heading is the group or organizational unit, the company name represents an individual record, and the phone number is an attribute of the record.

How does a directory service help manage a network? Imagine you're adding a new server for all 3,000 users of your WAN. Without a directory service, this requires adding all 3,000 user IDs to the new file server. With StreetTalk or Novell, Inc.'s NetWare Directory Services, you just hook the server to the WAN, announce its presence, and you're done. Users log on to a location in the directory tree rather than specific file servers. Not having to add those 3,000 user IDs saves lots of time and, hence, money.

Here's what to look for in a directory service:

■ **Ease of network administration** — The big advantage of using a directory service is that it reduces administration load for the network. Modern network operating systems need a set of tools with a graphical user interface that make administration easy.

■ **Scalability** — Directory services must be able to scale up as an organization grows. Really large WANs scale up into the thousands of servers with tens of thousands of users and services.

■ **High availability** — Since everything on the network is tied into the directory service, it needs to operate even if one or more file servers fail. If a file server goes down, the directory service shouldn't go down with it.

■ **Advanced database** — To get high availability you need a replicated and distributed hierarchical database system. This allows all the entries in the directory service to be available from any point on the WAN, whether communication links or file servers are up or down. It also allows management of the entire network from a single PC. The hierarchical part simply means that the database is made up of different groups or organizational units that contain more items, in the form of an inverted tree.

■ **File server independence** — Users should log on to the network rather than to a specific file server. Users then only need to know the name of a service or their complete user ID to log on from any location on the network. This allows services to move from one server to another without users even being aware that anything has changed.

■ **Extensibility** — A directory service should be able to extend its list of entry types beyond the normal users, services, disk drives and printers. Administrative information such as phone numbers, desk location and computer type should also be capable of being stored in the directory service to help with the administration of the network. Third-party vendors should be able to use directory services to store things such as host logon IDs, program configuration information and other system-specific information.

■ **Integrated services and security** — Services such as E-mail, faxing and printing, among others, should take advantage of the directory services to provide things such as user IDs and addresses. Network services should be tied into a single logon so that different services use one logon to validate the user. User access to the different network services should be controlled by information contained in the directory service.

■ **X.500** — For those outside the organization to connect to different networks, X.500 compatibility is ideal for the future.

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BLENHEIM

Continued from page 56

able. We suggest investigating a graphical client, such as Banyan's BeyondMail or LANShark Systems, Inc.'s SharkMail.

The good news is that the optional BeyondMail product is really slick, with support for rules, an automated secretary (MailMinders) and excellent searching and organizing features. Both the Banyan Mail client and the BeyondMail DOS and Windows clients effectively use StreetTalk. Message addressing in any IM3-compatible client involves simply pressing the F2 key while in the To, CC or BCC fields of the program and selecting a StreetTalk name, nickname or distribution list from the pop-up list of StreetTalk addresses.

Installation and integration of BeyondMail with StreetTalk and the VINES server are also impressive. The installation process is largely automated and provides the opportunity to select users directly from StreetTalk and give them access to BeyondMail. This includes adding users to the appropriate StreetTalk groups and setting access permissions on the VINES volumes.

Messaging rules

Messaging systems comprise clients, message stores and message transfer agents (MTA), that live, respectively, on workstations, in a shared file/directory structure or client/server database, and on a server.

The message transport software usually runs on the server and routes messages between users, post offices and gateways.

These MTAs are responsible for message movement. In sophisticated messaging systems, they might understand more than one protocol — SMTP, SMF71, X.400 — but the process they perform is the same.

To provide a more secure environment for developing applications on messages, vendors such as Microsoft Corp. and Novell, Inc. are putting rules-processing capabilities in the transport. That way, rules processing on the client might be used only for tasks such as deleting a message from a user's mailbox or moving it to a folder. More secure transactions, such as maintaining a workflow or deciding which manager to send a routed form to, would be performed in a controlled environment on the server.

The rules capabilities of BeyondMail are among its strongest features. BeyondMail gives users control over their message folders based on message content: messages from finance can be automatically filed for later reference; messages from the chief executive officer can launch a pager program; all Internet list server messages can be sorted and placed in appropriate folders; and when the user is out of the office, the rules engine can send a reply and forward messages automatically.

A bit of bad news, however, is the fact that all of the rules functionality exists on the client, not the server. The messaging transports in IM3 do not perform rules-based processing (see story, this page). In competing products such as Novell's GroupWise, rules processing can occur on the client, the server or both — permitting administrators and developers to deploy rules-based messaging applications in a more secure environment.

One final caveat: Large environments (those with at least 1,000 users) should plan on deploying multiple dedicated mail servers on some fairly high-performance platforms. BeyondMail performance on IM3 degrades noticeably, and unacceptably, as the number of users increases.

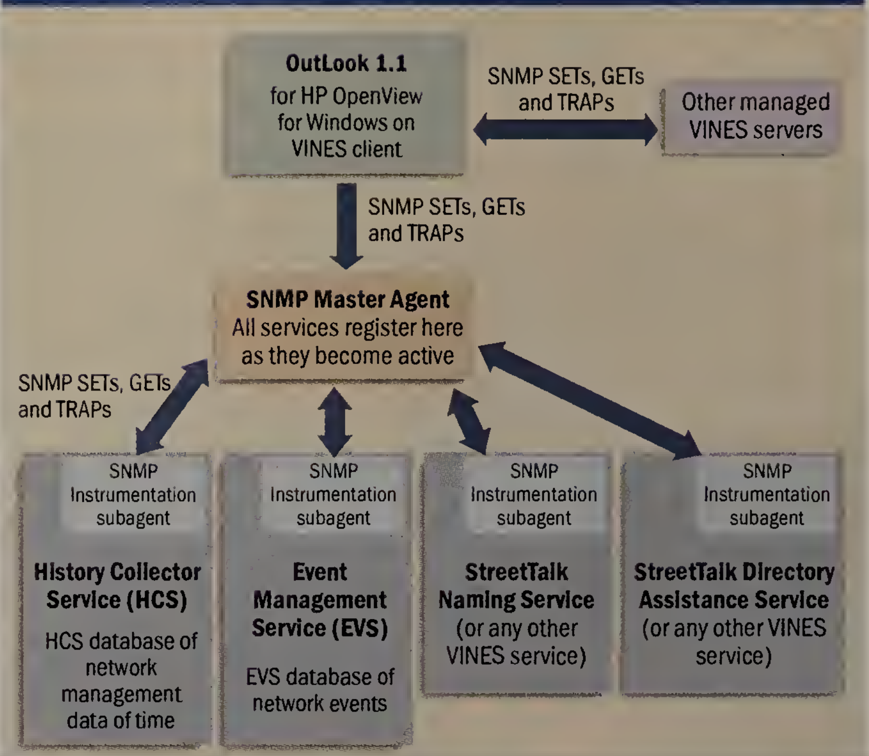
The management package

Unlike StreetTalk and Intelligent Messaging, which have been a part of VINES from the beginning, Banyan's Distributed Enterprise Management Architecture (DeMarc) is new with Version 6.0. DeMarc is based heavily on the Simple Network Management Protocol. Under SNMP, agents monitor and collect information about network software or hardware components, and Management Information Bases (MIB) define the information that is monitored or collected from each network component, and a console manages communications with the various agents. The agents and their associated MIBs are specific to the hardware and software they monitor.

DeMarc's ability to help manage a network depends on each device's support of SNMP operations. These operations include the commands SET, to alter a device setting or threshold; GET, to request information from the agent; or TRAP, to message the console that a component's status has changed. This reliance on an industry standard such as SNMP is a great strength. If a third-party vendor has hardware or software that can be useful to a VINES network and provides a MIB for the component, then it can be managed using DeMarc.

But DeMarc has no direct ability to help troubleshoot user-related problems. Apparently, Banyan assumes that the individuals managing the infrastructure will be different from those providing help desk functions. In smaller network settings, however, this is not always the case.

DeMarc management architecture



Microsoft's SMS and Novell's ManageWise are better suited for smaller networks. SMS concentrates on managing desktop configurations, although it does not include any SNMP components. ManageWise includes both SNMP support for infrastructure management and Intel Corp.'s LANDesk Manager tools for remote troubleshooting of user-related problems.

For each VINES server, the SNMP service is established by enabling the SNMP Master Agent. The SNMP Master Agent coordinates the communication between all the subagents — StreetTalk, Intelligent Messaging, History Collector Service, Event Management Service (EVS) and so forth — located on that server and the console. The subagents are basically SNMP code built into each participating VINES service that allows the service to respond to SNMP GETs, SETs and TRAPs. The SNMP Master Agent and all the subagents form the SNMP service for that server.

As each service on a managed VINES server becomes active, it registers itself with the SNMP Master Agent and tells the Master Agent what component it is responsible for. When the server receives a GET or SET command for a particular service, the Master Agent routes it to the proper subagent.

The SNMP Master Agent hides the complexity of the SNMP service by providing a single point of contact for the server to and from at least one console.

The Master Agent and the subagents are also part of the StreetTalk directory. This allows their attributes and security to be managed using the Windows-based ENS Management Tools or the appropriate DOS management utilities, such as MSERVICE or MATTR. This saves time by not forcing you to use different tools for managing the SNMP agents and StreetTalk objects.

In addition to the SNMP service, the other major portions of DeMarc are the History Collector Service (HCS), the EVS and an SNMP-based console.

HCS gathers and stores network management information and stores it in a local database. It can gather information from more than one server, but Banyan recommends that HCS be deployed on each server to cut down on network traffic. HCS is intended to track information about various network trends, such as traffic, disk usage or any other MIB attribute, over time. This information can be invaluable for planning controlled growth and traffic control.

EVS is a base service included with VINES 6.0 that monitors and stores important network events to another local database. An event can be an alert that a certain threshold has been surpassed, a logon has failed, a service has become inactive or a change has occurred in any other MIB variable.

The control room

The last part of the DeMarc equation is the console. While any SNMP-based console will work adequately, Banyan's offering, OutLook 1.1 for Hewlett-Packard Co. OpenView for Windows, provides some additional functionality than you might expect from a generic SNMP console. When we used it, OutLook 1.1 was in the last stages of beta testing; it is scheduled to be released by later this month.

The OpenView platform contributes two things to OutLook: SNMP Version 1 console capabilities and a Dynamic Link Library interface for supporting SNMP traffic over different network protocols.

One drawback to OpenView is that it limits you to SNMPv1, which prevents you from taking advantage of the capabilities of SNMPv2. These capacities include better security as well as new MIBs and packet-type definitions that allow you to retrieve larger blocks of data and communicate among management agents.

To use OpenView's SNMPv1 console capabilities, you must configure the SNMP Master Agent to support only SNMPv1, even though Master Agent can support SNMPv2.

A definite plus, however, is WINSNMP.DLL, which is a common interface for WINSOCK.DLL, VVINESD.386 and VIPX.386; they allow SNMP communication over TCP/IP, VINES IP and IPX network protocols. This effectively allows OpenView's SNMP functionality to be extended to network segments running these protocols. However, OutLook's discovery component is limited to just TCP/IP and VINES IP segments.

OutLook adds some Banyan components onto the HP OpenView platform. The first, BanFrame, retrieves topology data from the SNMP services located on the managed VINES servers. This data can be turned into detailed maps showing subnets, managed servers and network nodes running TCP/IP and VINES IP. You can select these discovered servers and establish remote console sessions or manage them by launching ENS MT (if installed) or OutLook's other components — Event Manager and MIBWizard.

Event Manager allows you to access the events stored in the EVS database of a managed server (see Figure 2, page 56). Administrators can access all the events during a specific time period or filter the event database before it is displayed. Filter criteria includes StreetTalk service name, service type and severity type (alarm, warning or audit event).

Finally, MIBWizard provides a graphical way of viewing a MIB's objects, querying network data associated with the MIB objects, and presenting that data in a variety of real-time graphs and charts. MIB Tree Viewer shows all the MIB's objects hierarchically in a window reminiscent of a File Manager.

Because MIBWizard is OLE 2.0-compliant, administrators can drag these MIB objects to MIB Document Viewer, where the real-time data can be shown as bar charts, pie charts or tables. These views can be saved and reused to monitor a MIB object or group of objects.

DeMarc is well suited for helping manage the infrastructure of a VINES net. Information can be queried, thresholds can be set, and alerts can be received from any SNMP-compliant device or service with a MIB.

Additionally, detailed network maps for planning, in-depth server management, event monitoring, and simple ways to view and query MIB object data are its definite strong points.

However, one significant area DeMarc fails to address is user-related problems, such as altering incorrectly configured client stations remotely.

DeMarc has no provision for solving user problems remotely; its function is to help manage the network infrastructure and services. This is an omission that Banyan must correct, since the only reason to have a network is to provide users with an effective tool to do their work.

The more problems (both network- and user-related) that can be solved by administrators from a single location the better the administrators can use their time and the lower the likelihood of user downtime.

Autumn for Banyan?

Banyan has a well-developed product that's been tested and enhanced for several years. Given all that time, though, you'd think there would be more third-party applications that support StreetTalk. You'd think that Intelligent Messaging would have progressed beyond a shared-file/directory architecture. You'd think that Banyan would offer better tools for managing network clients.

It's been a long time since Banyan has been a pioneer in any major area of networking. With NetWare's viable enterprise directory service and Windows NT's scalable application services, it will be interesting to see how Banyan retains its customer base and maintains market share. ■

The dreaded dongle

VINES is the only network operating system (NOS) that requires hardware copy protection in the form of dongles — firmware devices that plug in to a server's parallel port and are checked at boot time to enable NOS options.

To install new options, administrators must shut down all server software from the operator menu at the server console, plug the option key in to the server's parallel port and select Install Option Key Contents from the Manage Software Options menu. This changes a bit in flash memory on the server key, which never leaves the parallel port. The administrator can then remove the option key.

Once an option is installed, administrators can use software already bundled with VINES to manage it.

Nobody really likes dongles. If your server is stolen or destroyed — for example, in a fire—you can't simply restore your data to a new server since that server will not work without the missing dongle. You have to depend on Banyan to send you another dongle with the options you need overnight. By contrast, when our NetWare server was stolen, we bought another one and restored it from tape in less than a day. With a dongle, you're almost guaranteed an extra day's downtime.

World TEST ALLIANCE

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 47.

Allen is a consulting systems engineer for Attachmate Corp. in Bellevue, Wash. (johnal%atmcorp.atm@zip.atm.com); Croes and Penrod are industry analysts with Currid & Co. in Houston (croes and penrod@ngwgate.mhs.compuserve.com); and Marks is a principal of TigerTeam, a South Norwalk, Conn.-based consulting firm (hmarks@pipeline.com).

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NETWORLD+INTEROP

Conference: Sept. 25-29, 1995 • Exhibition: Sept. 27-29, 1995 • Atlanta, Georgia

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NETWORLD+INTEROP

As you schedule your time at NetWorld+Interop, here's our take on the events that can provide a big return on your investment. Included are Network World's *recommendations for the daily events you won't want to miss, plus a Day at a Glance conference schedule. There's also a listing of show floor events that may be worth a visit and some ideas for what else to take in at the show.*

Wednesday, Sept. 27

DAY AT A GLANCE

10:30 a.m.-Noon
- *The Future of Routing*
- *ATM: A Status Report*
- *Corporate Web Deployment*
- *Technologies for Putting Your Home Office on the Internet*
- *IPX/ng*

2 p.m.-3:30 p.m.
- *Telecommuting*
- *HTML-enabled Applications*
- *Can ATM Networks Support Hierarchical Routing?*
- *In Perspective: Making the Internet More Secure*
- *Designing LANs for High Throughput*

4 p.m.-5:30 p.m.
- *Managed WAN services: Is it right for you?*
- *Switched and ATM LANs: Complementary or Competitive?*
- *Welcome to Noveau Legacy*
- *In Perspective: Electronic Mail—A Layered Defense Against Communications*
- *LAN Application Gateway Gotchas*

6 p.m.-8 p.m.
- *ISDN vs. V.modems*

Pick of the DAY

KEYNOTE
Sheldon Laube, *executive vice president and chief technology officer of Novell, Inc.*
12:15 p.m. to 1:15 p.m.

[illegible] out Novell's new [illegible] and SuperNOS strategy. [illegible] NT [illegible] Novell [illegible] services [illegible] that [illegible] and [illegible] operating [illegible]

10:30 a.m.-Noon

The Future of Routing

David Clark of the Massachusetts Institute of Technology and other members of the Internet Engineering Task Force will relate protocol innovations that support next-generation applications, such as multimedia, over traditional routed infrastructures. Topics will include resource reservation protocols, multiprotocol routing over "large cloud" networks, and several new multicasting protocols such as Multicast Open Shortest Path First.

ATM: A Status Report

Keith McCloghrie of Cisco Systems, Inc. will lead this session in which speakers will attempt to paint a clear picture of where ATM stands today on the technology development front as well as from the product and service standpoint.

Corporate Web Deployment

Mary Morris from Finesse Liveware will chair this session that looks at the World-Wide Web as an internal information resource for everything from project management to inventory access. The external marketing and sales potential of the Web will also be discussed.

2:00 p.m.-3:30 p.m.

HTML-enabled Applications

Developer Richard Frenkel of Infoband, Inc. and other application writers will share what they've learned concerning the increasing link between business applications and the HyperText Mark-up Language (HTML) foundation of the Web. They will examine how you can produce HTML-enabled business applications that make it easier to develop and make use of interactive Web pages.

Can ATM Networks Support Hierarchical Routing?

Nick Lippis, president of Strategic Networks Consulting, Inc., will tackle this question in a session that addresses ATM's lack of a mechanism to break large, flat emulated LANs into smaller domains without resorting to separate routers. Lippis and other speakers will explore how routing will evolve into ATM networks.

4:00 p.m.-5:30 p.m.

Switched and ATM LANs: Complementary or Competitive

Headed by James Metzler of Strategic Networks Consulting, this session will look at currently available ATM alternatives.

Switched Ethernet, token ring and FDDI already offer many of the benefits that ATM promises, without the risks of brand-new technology.

As a counterbalance, session speakers will offer insights into how ATM justified itself in early trials.

7:30 p.m.-9:30 p.m.

Birds-of-a-Feather Session: Internet Firewalls

Moderator Frederick Avolio of Trusted Information Systems will review a Firewall Product Functional Summary put out by the newly formed Firewall Product Developers' Consortium. Participants will also share firewall implementation techniques and trade war stories.

Thursday, Sept. 28

DAY AT A GLANCE

10:30 a.m.-Noon
- *DLSw: The Current King of SNA-Over-TCP/IP*
- *Multimedia Access to ATM*
- *In Perspective: Software Distribution*
- *Reinventing Government as an On-line Service*
- *Making the Move to Windows NT Application Servers*

2 p.m.-3:30 p.m.
- *Mobile LAN Access: Don't Leave Home Without it*
- *Speaking on ATM*
- *Is it Time to Roll Your Own Voice Mail System?*
- *Extending Networks ISDN Style*

4 p.m.-5:30 p.m.
- *The Future of Congestion Control and Performance Monitoring*
- *FDDI Gets a Midlife Kicker*
- *Making Distributed DBMS Effective Over Real-World Networks*
- *How to Talk Data to Your Local Phone Company*
- *Video on the Net: LANs, WANs and Interactive Television*

6 p.m.-8 p.m.
- *Switching Test and Evaluation Results*

9:00 a.m.-10:00 a.m.

Selected Keynote: Jim Allchin, senior vice president of Microsoft Corp.'s Business Systems Division

Allchin will shed light on how Microsoft is steering its business products further into the realm of distributed computing and networking environments. As the man in charge of the BackOffice product family, which includes Windows NT Server, SQL Server and Systems Management Server, as well as the Windows NT Workstation operating system and Microsoft's OLE object-oriented technology, Allchin will also share Microsoft's vision of future high-end systems software.

10:30 a.m-Noon

DLSw: The Current King of SNA-Over-TCP/IP

Attendees will hear about first-hand experiences from users that have selected, planned and implemented Data Link Switching (DLSw) for internetworking in Systems Network Architecture environments. Louise Herndon Wells of the Internetwork Technology Institute will chair this session, which also will provide a technical overview of DLSw.

Quick Hit Panel Presentation: Picking the Right Web Server

Hear how users have selected their Web servers and get hints on how to pick the right platform for your requirements. Moderated by James Southworth of FC Business Systems, the discussion will hit on

COMPANION CONFERENCES

Several conferences will be running all week in conjunction with NetWorld+Interop, including:

The **Network Analysis Forum** is designed to assist network professionals in improving upon current analytical skills, increasing protocol knowledge and learning new troubleshooting technology. Attendees can choose from more than 50 sessions, as well as meet with other experts and colleagues. All sessions will be held in the Georgia World Congress Center. For more information, call (800) 638-7545.

The **NetWare User Conference** will explore networking issues related to operating in a Novell environment. In addition, the conference combines with Novell's Certified NetWare Engineer program, providing courses and exams.

The conference will be held at Atlanta's Omni Hotel. For more information, call (800) 228-4684.

At **BrainShare Atlanta,** Novell will unveil the next generation of GroupWise, its messaging and groupware product.

The conference will be held at the Atlanta Marriott Marquis. For more information, call (800) 253-3429.

how to choose the right hardware as well as whether to use commercial software to do HTML scripting.

2:00 p.m.-3:30 p.m.

Mobile LAN Access: Don't Leave Home Without It

As more people use laptops to work from the road, access to the corporate LAN is becoming increasingly important. Chaired by William Yeager of Sun Microsystems, Inc., this session will have speakers from Wireless Telecom, Inc. and Lotus Development Corp. who will detail what mobile LAN access services are needed and what products are currently available.

Quick Hit Panel Presentation: Internet Security Firewall Products

Firewalls are becoming increasingly important as companies attach to the Internet and risk attacks from the outside. This discussion, moderated by Brent Chapman of Great Circle Associates, will teach you how to put up a barrier between your net and the Internet. Speaker Glenn Mackintosh of Border Network Technology will help you understand how to evaluate products.

6:00 p.m.-8:00 p.m.

Switching Test and Evaluation Results

Harvard University's Scott Bradner, along with Strategic Networks Consulting, Inc.'s Nick Lippis, will present results from tests of 10M and 100M bit/sec Ethernet switches. The test evaluates the leading vendors' switches and will help net managers differentiate and choose a switching device.

7:30 p.m.-9:30 p.m.

Birds-of-a-Feather Session: CU-SeeMe: Uses and Users

Attendees will get an overview of CU-SeeMe, software developed by Cornell University for low-cost videoconferencing over the Internet. Veteran and novice users will be on hand to share their experiences with the software and provide details for how to download it from the 'Net.

Birds-of-a-Feather Session: Frame Relay and ATM Point-to-Point

Christine Heckart, principal with TeleChoice, Inc., will lead a discussion that will help you understand the uses and limitations of frame relay to ATM interworking and the Frame User-to-Network Interface (FUNI) standards.

Pick of the DAY

BIRDS-OF-A-FEATHER SESSION

Desktop Management Task Force

7:30 p.m. to 9:30 p.m.

This event will give the Desktop Management Task Force (DMTF) a venue for discussing new technologies in the field of desktop and server management systems. DMTF members will shed light on how the Desktop Management Interface can become a catalyst for improved management applications to ease LAN administrators' workload.

Friday, Sept. 29

DAY AT A GLANCE

10:30 a.m.-Noon

- *What's Hot in Wireless*
- *Is the Internet Really for Audio/Video Collaboration?*
- *Internet Plug-and-Play with DHCP*
- *New LAN/SNA Gateways*

2 p.m.-3:30 p.m.

- *Collapsed Backbone: Going Distributed?*
- *Limits to the Internet Administrative Structure*
- *Is it Time to Dump NetWare?*

10:30 a.m.-Noon

What's Hot in Wireless?

Chaired by Bill Frezza of Wireless Computing Associates, Inc., this session will address the latest issues in wireless interoperability. The hot topics will include Mobile IP, IEEE 802.11 and Cellular Digital Packet Data.

Speakers from Netvision, Advanced Micro Devices, Inc. and Isotel Research, Ltd. will discuss optimal routing, authentication and registration.

Quick Hit Panel Presentation: ATM Switches

Get the lowdown on ATM switching from Bay Networks, Inc.'s Robert Newman, Anderson Consulting's Kirk Kirkpatrick and Efficient Networks, Inc.'s David Chiswell. The session will address the latest ATM performance benchmarks along with the ATM standardization effort, and feature and price differences among ATM switches.

Quick Hit Panel Presentation: NOS Wars

The role of the network operating system is changing from providing file and print services to higher level network integration. In a discussion moderated by Ed Tittel of LANWrights, speakers from Artisoft, Inc., Banyan Systems, Inc., IBM, Microsoft Corp. and Novell, Inc. will craft a basic definition of NOS requirements.

2:00 p.m.-3:30 p.m.

Is it Time to Dump NetWare?

Many longtime NetWare users have begun to evaluate what it will take to make the move to some other NOS. In this session, chaired by David Strom of David Strom, Inc., end users will offer their evaluation of Novell's service and support, and will share their NOS plans.

Pick of the DAY

QUICK HIT PANEL PRESENTATION

Managing the Virtual LAN

2:00 p.m. to 3:30 p.m.

As switches are deployed in more networks, you've got the ability to set up logical workgroups of users independent of location, something called a virtual LAN. Moderator John McConnell of McConnell Consulting, Inc. will focus on the difficulties of managing such a fluid environment and will bring together vendors and users to assess the current state of virtual LAN management. Speakers will include Toney Moraros of Cisco Systems, Inc., William Seifert of Agile Networks, Inc. and Laurence Walker of Digital Equipment Corp.

PRODUCT PRESENTATION THEATRES

Company: AT&T
Topic: Service internetworking – frame relay, ATM, private line, FUNI
Time: 11:00 a.m.-11:50 a.m.
Date: Thursday, Sept. 28
Room: 2

Company: Bay Networks, Inc.
Topic: RMON2 – Moving to proactive management of client/server nets
Time: 3:00 p.m.-3:50 p.m.
Date: Wednesday, Sept. 27
Room: 3

Company: Cisco Systems
Topic: LAN emulation
Time: 1:00 p.m.-1:50 p.m.
Date: Wednesday, Sept. 27
Room: 7

Company: CyberCash, Inc.
Topic: Payment systems in cyberspace
Time: 11:00 a.m.-11:50 a.m.
Date: Friday, Sept. 29
Room: 3

Company: Network General
Topic: Designing monitoring and analysis into switched LANs
Time: 3:00 p.m.-3:50 p.m.
Date: Thursday, Sept. 28
Room: 2

SOLUTIONS SHOWCASE DEMOS

(Continuous, during show hours daily)

•Interoperability

Sponsored by the University of New Hampshire's InterOperability Laboratory, this demonstration network will link equipment from many different vendors in a mixed-media environment that includes Ethernet, token ring, FDDI, ATM and Fibre Channel technologies. Vendor booths will be connected to the network, with management platforms on-line to provide visitors with a detailed perspective of configuration issues.

•LAN Emulation and ATM

Several vendors, including Fore Systems, Inc. and Bay Networks, Inc., will participate in this demonstration network that links Ethernet switches over an ATM backbone using ATM LAN Emulation. Frame-based multimedia applications will be run between two virtual LAN domains, using switched virtual circuits between ATM-attached devices.

•Multimedia and the RSVP Protocol

Can multimedia get by without ATM? This showcase is a proof-of-concept demonstration of the Resource Reservation Protocol (RSVP) being developed by the Internet Engineering Task Force. RSVP attempts to provide ATM-like quality of service parameters for IP-based applications.

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Software Engineers

Multiple positions in the areas of design, diagnostics, release, QA and network management. Must have experience with networking and C programming. Additional experience in one of the following areas:

- Development management
- UNIX device driver software and/or kernel development
- ATM routing protocols
- Network protocol development
- Network management software (e.g., SNMP) and user interface development
- Software testing, configuration management and/or quality control
- Windows NT and/or Novell NetWare device driver software
- MAC system software

Manufacturing Opportunities

Many openings exist at all levels for seasoned professionals

Hardware Engineers

Multiple positions in the areas of diagnostics, design and testing. Must have experience in designing and testing computer or network hardware. Additional experience in one of the following areas:

- Development management
- Digital/analog design
- ASIC development & VHDL
- Design of hot swappable boards, power supplies & MTBF calculations
- Familiarity with FPGA/gate-array design
- Developing testing and diagnostics software (UNIX & C required)

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INTERNETWORKING PRODUCT DEVELOPMENT OPPORTUNITIES

AT&T Paradyne is currently seeking Software Developers with experience in LAN internetworking product development. Experience in developing C language software for bridges, routers or LAN interface cards with specific emphasis on IP, IPX, NETBIOS, PPP or frame relay protocols is necessary. Development experience in real time Micro Kernel environments is highly desirable.

Additional opportunities exist for Systems Engineers experienced in standards activities in the internetworking community and development of internetworking products (bridges and routers); and System Testers experienced in testing LAN internetworking products.

To arrange an interview at the InterOp Conference, please call Steve Oakman at (813) 530-8044. If unable to attend, resumes may be forwarded to: **AT&T PARADYNE, Human Resources, Code CES, P.O. Box 2826, Largo, FL 34649-2826, Fax (813) 530-2267.** An equal opportunity employer, M/F/D/V.

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The impact of what we've done is still being felt on every level. We put the combined strength of our $1 billion organization behind our employees...creating an environment where talented individuals can fully capitalize on their vision and succeed. We offer the only end-to-end, integrated solution of shared media connectivity, routing, switching, WAN access and network management. Our stock has doubled; and our expanding product line is unequalled in its depth and quality, setting new industry standards that will be hard to beat. It's no wonder the industry's most accomplished professionals are consistently drawn to us — once they've seen the technology, resources, and growth potential we have to offer, they won't settle for less.

Prestigious businesses from across the country are just as eager to share in our bright future. AT&T Global Business Communications Systems has agreed to sell, service and support our equipment as a preferred partner. We've negotiated joint development and marketing agreements with Microsoft Corporation to feature our routing services and interfaces for third party networking solutions in their Windows NT Server, and our multi-protocol routers are being incorporated into Novell's Corporate Test WAN. Next on the horizon...our announcement of a binding agreement to acquire Massachusetts-based Xylogics, a market leader providing enterprise remote access to corporate information and services such as the Internet.

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BILLERICA, MA OPPORTUNITIES

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WAN Protocol Development

Requires a minimum of 3 years' WAN protocol development experience (PPP, Frame Relay, SMDS, X.25) in an embedded environment. **Dept. JS/WAN**

IP Protocol Development

Requires 3+ years' IP experience working with UNIX® and embedded systems. C programming required. Knowledge of OSPF and RIP a plus. **Dept. JS/IP**

Senior Engineer

Requires 4+ years' development experience using C++ in a UNIX environment. Motif programming, networking/network management experience, including SNMP and Expert systems, preferred. **Dept. EK/NM**

Routing/Switching Engineers

Develop our next generation Frame Relay, NFS, SMDS and ATM products in our customer systems group. Should have strong protocol experience. Real-time embedded systems, C, C++ a plus. **Dept. EK/RS**

Embedded Network Management Engineer

Design and develop embedded agent software for next generation switched router and virtual LAN products. BSCS or equivalent and 3+ years' embedded software development in C, with experience in SNMP and/or MIB design. **Dept. DN/ENM**

Configuration Management Release Engineer

Perform software configuration management by building software, and updating and controlling products for on-going development and release. Responsible for development and maintenance of integration. Requires strong UNIX/shell scripts, and experience with a source code control product. Experience with ClearCase, C programming, and large development projects desired. **Dept. FD/CM**

MARKETING

Manager Customer Services Marketing

Manage World Wide Customer Service Marketing. Develop and implement marketing communications programs and tools and integrate customer service marketing programs into sales strategies. Must have demonstrated senior marketing and management experience and in-depth knowledge of customer service. Knowledge of the internetworking industry preferred. **Dept. AH/MM**

EDUCATIONAL SERVICES

Technical Instructors

LAN Products - Must have 2+ years of instructional experience with strong technical knowledge of Ethernet, Token Ring, DOS/Windows and UNIX to train customers on latest product offerings.

Router Products - Requires strong technical skills for instruction of internetworking technology. Must have in-depth knowledge of at least one of the following: DECnet™, TCP/IP, AppleTalk®, Banyan VINES®, SNA, ATM and/or Frame Relay.

Travel required. Positions also available throughout the US. **Dept. AH/TI**

PROFESSIONAL SERVICES

Network Consultants

Address the full spectrum of network architecture and design including topological recommendations, network numbering schemes, network implementation, optimization, security, and systems management. Requires broad knowledge of networking, and expert knowledge of protocols including Layer 3 and two or more of the following: TCP/IP, DECnet, XNS, AppleTalk, IPX, and ISO. **Dept. NC**

SANTA CLARA, CA OPPORTUNITIES

MARKETING

Solutions Marketing Manager

In this senior-level position, you will be aligned by market segment and application to provide product marketing support and marketing programs. BS or equivalent desired, MBA a plus. 10+ years' experience with a successful track record of product marketing in a high-tech company in networking or a related industry. Some limited travel. **Dept. PH**

CD ROM Developer

Create and develop CD's with user interfaces, search engines and development tools (including Frame, Director and Acrobat). Manage multiple projects and lead the technology selection for our CD products. BA/BS or equivalent, 3+ years' related experience, and excellent project management and technological skills are required. **Dept. PHSJ1**

CUSTOMER SERVICE

New Product Introduction Engineer

Provide technical expertise and program management for the roll-out of our cutting edge new product and service offerings. In this highly visible position, you will drive key initiatives aiding in problem diagnosis and support responsiveness. BSEE, CS or IS and 5+ years' program management experience, preferably in a large technical support environment. **Dept. TW2**

HARDWARE ENGINEERING

ASIC Engineers

Using the latest tools, lend your expertise to the definition and design of our next generation switching ASIC's - from definition through prototype analysis. BS/MSEE and demonstrated experience with VHDL/Verilog, Synopsys, digital design techniques, DFT and ASIC design flow. **Dept. MZ/JH**

PRODUCT MANAGEMENT

Senior Product Managers

Manage state-of-the-art products utilizing your BS/MS in EE/CS (MBA desirable) and 5+ years of project or product management experience. Requires experience with the following: ATM, Frame Switching, Fast Ethernet, Token Ring and network management software. **Dept. FP**

SOFTWARE ENGINEERING

Senior and Staff Software Engineers

Design and develop our high performance Fast Ethernet switch products. Work with embedded system real-time software featuring SNMP agent and a sophisticated switch fabric management software. Development work is done in an ATM environment and involves new feature enhancements. BS/MSEE or equivalent, 5+ years' software development experience; experience designing and developing high performance Fast Ethernet switch products; experience with embedded system real-time software including SNMP agent and sophisticated switch fabric management software; device drivers, LAN protocol and low level networking protocols, C/C++, UNIX, MIB agent 802.ID experience is desirable. **Dept. SA1**

Software Test Engineer

Identify and test complex embedded software features. Document and ensure the integrity of the final product release. BSEE or equivalent and 3+ years' background in high level software development/testing required. Strong working knowledge of networking, Token Ring, Ethernet, and TCP/IP, IPX and SNMP protocols necessary. **Dept. SA2**

U.S. OPPORTUNITIES

SALES

Sales Representatives

Apply your 4+ years' of networking product sales experience to sell direct to end-users and channel accounts. Requires strong knowledge of current networking standards, hardware and software. **Dept. KM/SR**

Systems Engineers

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*For Santa Clara, CA opportunities, mail, fax or e-mail your resume, referencing department code, to: **Bay Networks, Inc., 4401 Great America Parkway, P.O. Box 58185, Santa Clara, CA 95052-8185; fax (408) 764-1899. E-mail: careers@baynetworks.com***

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Project Leader candidates should have hands-on experience implementing the above technologies, complemented by troubleshooting skills with diagnostic tools such as a protocol analyzer.

So, bring your resume and join us at Networld + InterOp '95 at our Hospitality Suite Monday, Tuesday & Wednesday, 9/25, 9/26 & 9/27, 5PM-8PM,Omni Hotel, CNN Center, Atlanta. *Concierge Desk will advise you of the suite number.*

If unable to make it to Networld+InterOp '95, FAX your resume to National Recruiting Manager at (503) 425-5394; or e-mail: ameeker@acs.uswest.com. For more information about these and other data networking opportunities, see us on the web: ***http://www.careermosaic.com/cm/uswest/home.html*** *An equal opportunity employer.*

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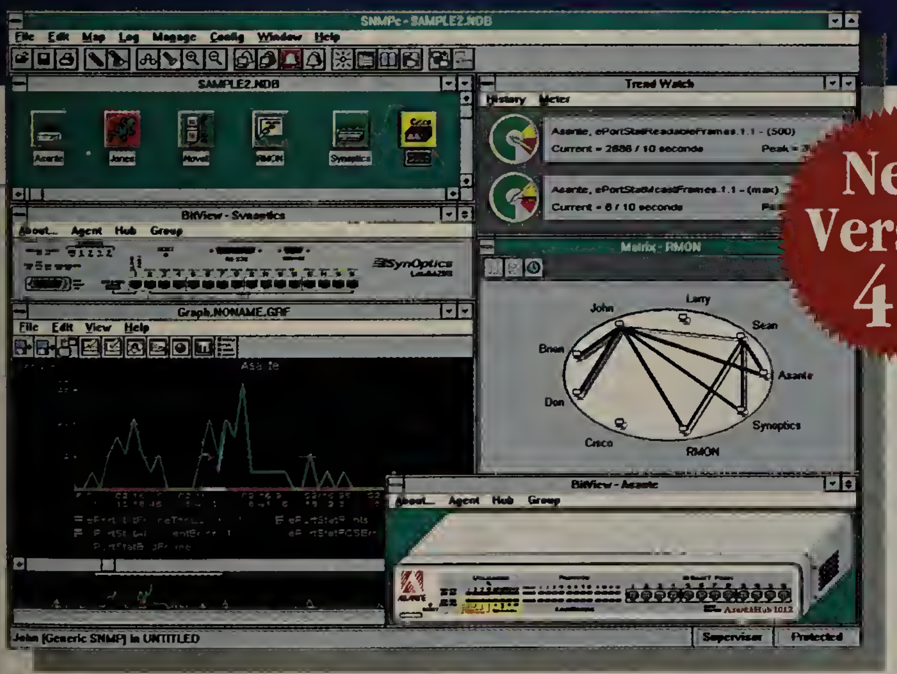

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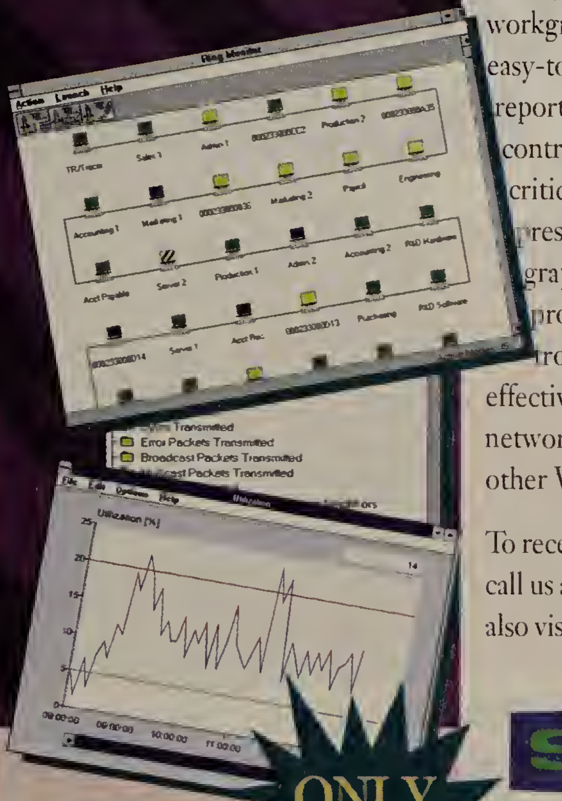

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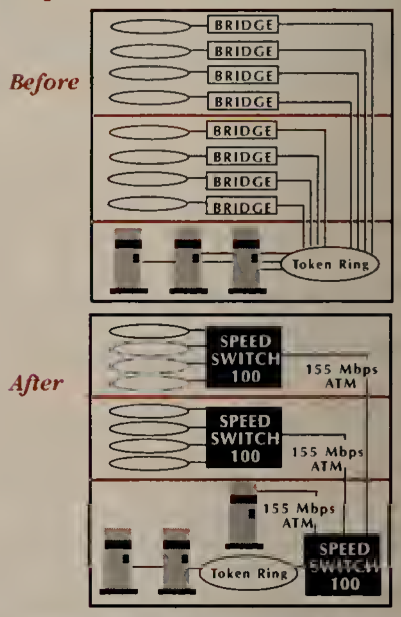

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New Frontier Technologies Internet Software Allows Offline Search

By ANN KRAUSS

Frontier Technologies, developer of award-winning TCP/IP applications, announced the release of a unique new Internet software product for Microsoft Windows-based systems, SuperHighway Access CyberSearch™. This CD-ROM product features Frontier's popular SuperHighway Access Internet browser, integrated with a huge database of Internet resources which can be searched off-line, thereby reducing on-line charges and increasing productivity. The database is Lycos™, developed by Carnegie Mellon University, which is widely accepted as the most extensive catalog of Internet resources.

Frontier Technologies' SuperHighway Access CyberSearch will be produced monthly (bi-monthly initially), to reflect the rapidly-expanding array of information available on the Internet. Subscribers will pay as little as $6.75 per month. Each CD will contain a newly compiled version of Lycos, covering over 500,000 Internet pages indexed by keyword. Users can browse off-line for sites of interest and assemble a file of Internet resources using SuperHighway Access's sophisticated Internet Organizer. Then, once connected to the Internet, users can launch multiple searches at once, and be reviewing or downloading information from one site while connecting to another.

"It is now widely understood that one of the primary barriers to user productivity on the Internet is finding information," said Dr. Prakash Ambegaonkar, president of Frontier Technologies. "That's why Internet search services like Lycos and Yahoo™ are among the Internet's most popular sites. As a result of their popularity, these services can be frustratingly congested and slow. By putting the Lycos catalog on a CD, users will be able to reliably and quickly locate the Internet resources they need before they even connect to the Net."

SuperHighway Access CyberSearch will work with the user's current Internet service provider, or new Internet users can establish an account via convenient autoregistration with PSINet's Instant InterRamp, a national Internet service provider. PSINet is offering CyberSearch users a free 7-day trial account, with the option to register permanently at the end of that time.

CyberSearch targeted at both business user and consumer

SuperHighway Access CyberSearch is suitable for both business and home use. It provides all the connectivity software required for home users to connect to the Internet via modem and will also run on an existing corporate TCP/IP local area network. By first pinpointing the sites they need to visit, using CyberSearch, employees can rapidly gather competitive information or market research.

Pricing and Availability

SuperHighway Access CyberSearch is available immediately. Frontier Technologies intends to market the product through retail channels and through subscription. The current product has a September 1995 cover date and is specially priced at $14.95. Frontier intends to provide bi-monthly issues initially and anticipates moving to monthly publication in January 1996. Two subscription choices are available: an open-ended "no-hassle" subscription at $6.95 plus $3 shipping and handling, billed per issue (credit card customers only), and a 6-issue charter subscription offer for $58.50 ($6.75 plus $3 s/h per issue). To subscribe with either plan, or to order an introductory trial issue, customers should call 1-800-879-0075. (Outside the U.S., please call +1-414-571-0190.) Further information is also available on Frontier Technologies World Wide Web site, www.frontiertech.com.

Frontier Technologies, founded in 1983, is a global company with headquarters near Milwaukee, Wisconsin. With offices in California, Pennsylvania, Europe, and India, Frontier Technologies now employs more than 100 people worldwide. ■

SuperTCP Suite, CyberSearch, Internet Organizer and SuperHighway Access for Windows are trademarks of Frontier Technologies Corporation. Lycos is a trademark of Carnegie Mellon University.

"With grueling competition... SuperTCP [Suite]* pulled ahead to garner Communication Week's MAX Award."

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Frontier Technologies Corporation

Photo by Tim Davis

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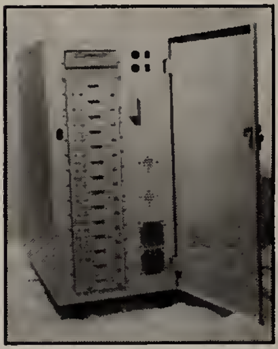

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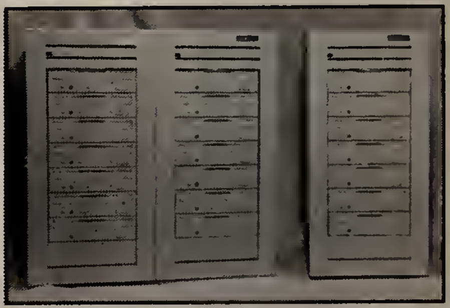

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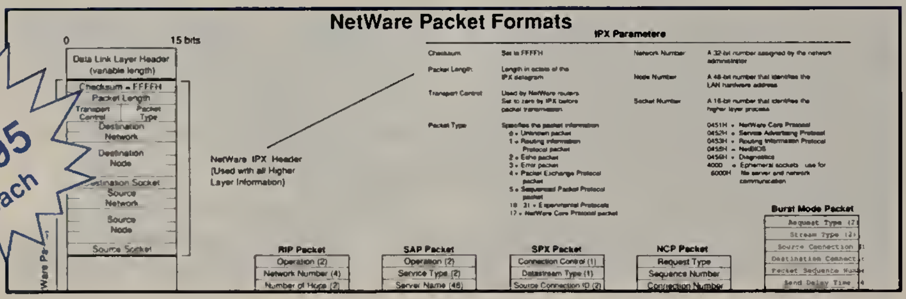

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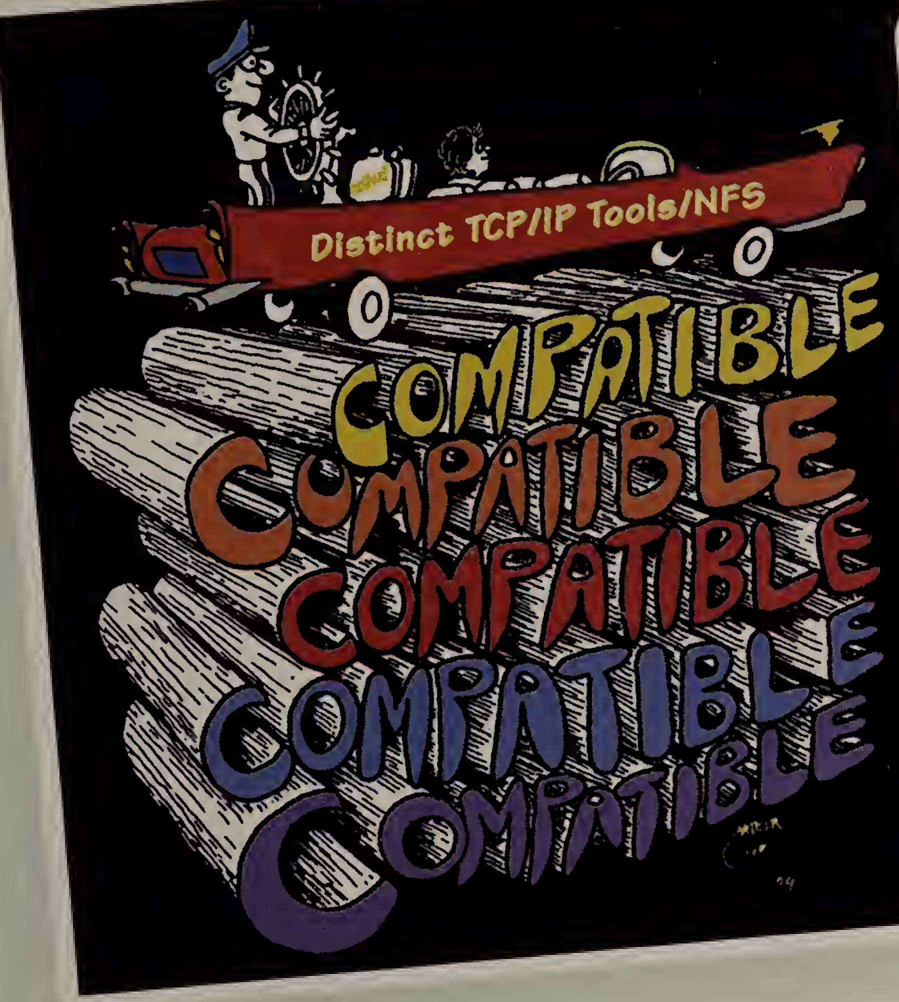

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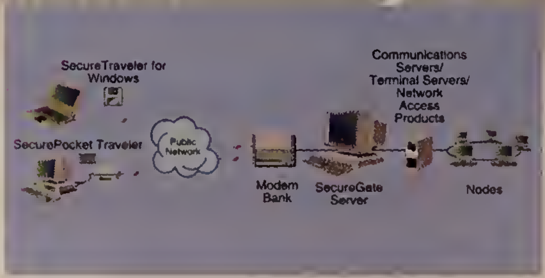
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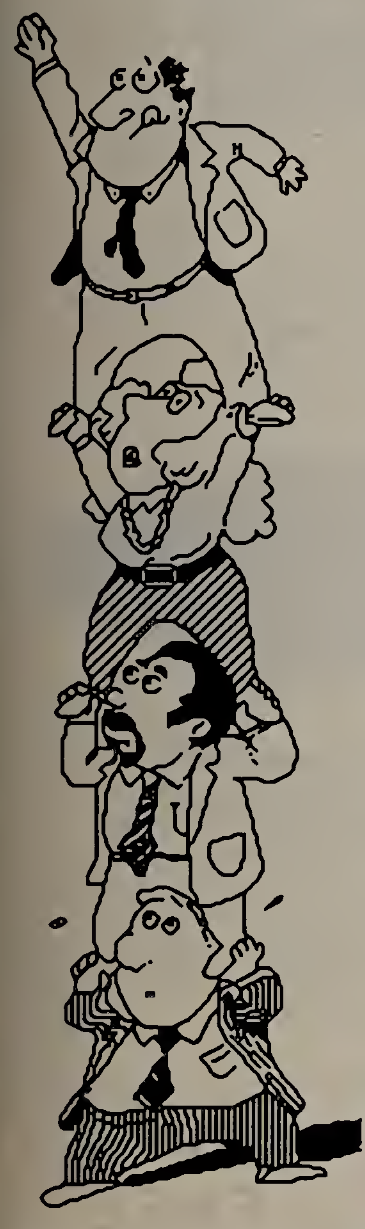

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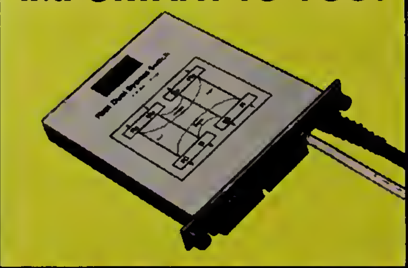

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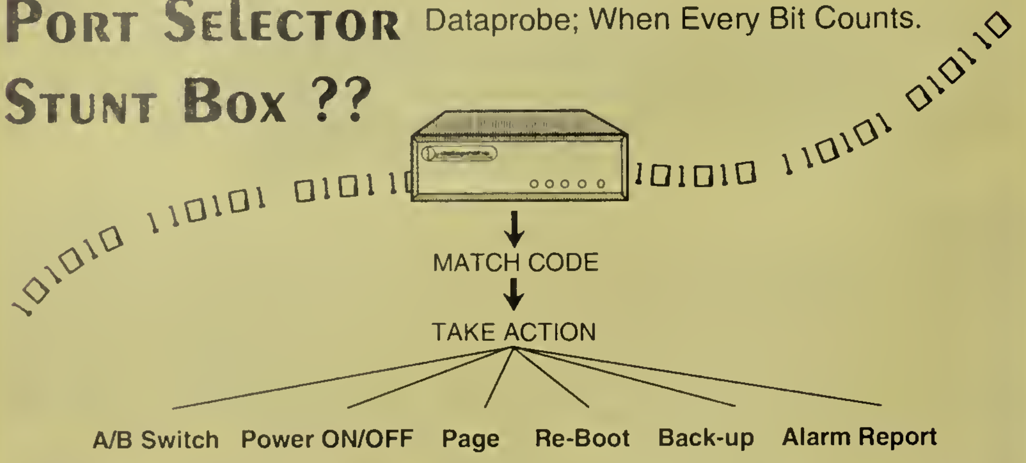

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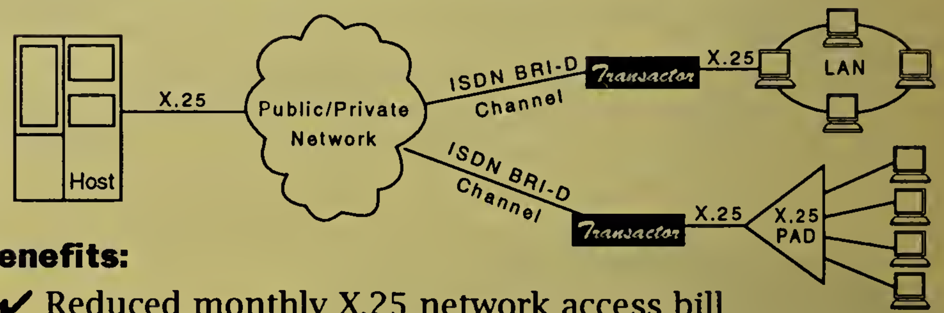

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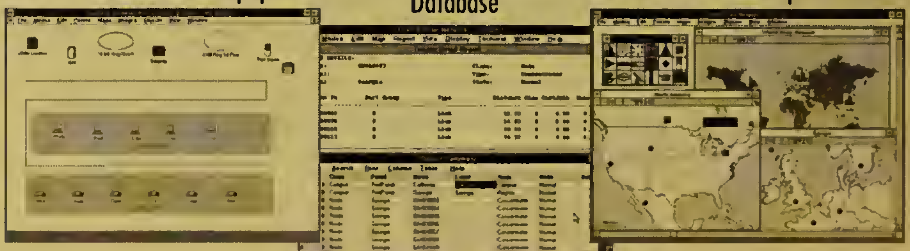

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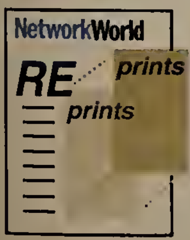

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Fore

Continued from page 1

module that fits into the various IMACS chassis. Available by the end of this year, the ATMC will convert analog and digital voice, video and various types of data into ATM cells and send the mixed traffic over a 45M bit/sec T-3 ATM link.

Premisys is suddenly an ATM player to be reckoned with, according to analysts. And although the announcement mentioned nothing of Fore's and Premisys' future intent, sources said the two companies are warming up to tango.

Fore is expected to either resell ATMC under its own private label or to license the underlying technology for its own use. Officials at both companies would neither confirm nor deny that such a deal may be pending.

For example, Fore currently lacks a frame relay offering. "So you pop a frame relay module into the Premisys box, and it's done," a source said. "Same thing with voice and circuit-switched traffic. Fore doesn't do voice, and they don't have a platform that can turn [time-division multiplexer] traffic into ATM cells, which is exactly what Premisys now offers. The two of them are going to do very well."

Premisys is currently a ForeThought Partner, and the ATMC announcement mentions that Fore's ATM management software can be used to integrate the ATMC in a Fore-based network.

"We've been working with [Fore] for close to a year behind the scenes on this platform," said Robert Lefkowits, Premisys' vice president of marketing.

Going for an ATMC license

The ForeThought partnership is focused soley on licensing the ForeView management software for use in the ATMC, he said. "If you're running Fore switches, the ATMC will be a fully integrated element in the system. But we can also work with other ATM switches, in which case our own management system will let you manage the box."

"Guys like StrataCom and Northern Telecom are trying to bring all this legacy traffic into their own ATM switches," said Al Spiegelman, president of AM Consulting in Denver.

Priced at $24,000 with an ATM interface and with as many as 15 slots for traffic feeds, the ATMC can mix and match more types of traffic than any other offering.

And although Premisys focuses mainly on wide-area access, the product could just as easily be turned around to feed a local ATM net.

"You plug voice and video feeds into the Premisys box, plug it into a Fore switch, and you've got campus ATM supporting multimedia traffic," said Howard Anderson, president of The Yankee Group in Boston.

Paul Wahlen, a user of Fore's equipment, said he would be "elated to death" if the deal goes through. Wahlen is manager of field support for Kodak Medical Imaging in Dallas.

"If I could get real-time images running alongside live consultations on the same ATM link, I would pat them on the back," he said.

Fore: (412) 772-6600; Premisys: (510) 353-7600.

Senior Writer Tim Greene contributed to this story.

IBM

Continued from page 1

NETWORLD+INTEROP PREVIEW

The Common Agent Architecture IBM is proposing will use the Desktop Management Task Force's Desktop Management Interface (DMI) technology, which lets users gather a variety of desktop system data, such as disk usage and PC configuration, and monitor the performance and status of individual applications.

APIs will be included to let management consoles, such as Hewlett-Packard Co.'s OpenView and IBM's NetView for AIX platforms, share event and topology data. A DMI-to-Simple Network Management Protocol conversion API will also be included.

IBM is also expected to include a full DMI-compliant agent for Microsoft Corp.'s Windows 95 and Windows NT, which it will make available free for other vendors. Microsoft has pledged less than complete DMI-compliance for Windows 95 (*NW*, Nov. 18, 1994, page 1), so IBM developed its own agent for Windows, sources said.

The Nways packages, meanwhile, are based on existing NetView technology but will integrate previously separate applications, such as the 8224 NetView for Windows program used to manage IBM's 8224 Ethernet stackable hub and the AIX NetView Hub Management program that manages the 8250 hub. Nways packages these applications and gives users a common interface that graphically displays all the management applications on one screen.

Another new application is Nways LAN Remote Monitor for Windows, AIX and HP. LAN Remote Monitor will provide a range of Remote Monitoring-2 functions for Ethernet and token-ring LANs. It includes two new programs: a Traffic Transmission Management Module (TTMM), which resides on LAN segments and reports a variety of information such as packet transmissions to the Enterprise Communications Analysis Module, which runs on the management workstation and presents the TTMM data graphically.

The Nways LAN RMON for Windows and Nways RMON for AIX will be available Sept. 29 for $2,749 and $4,999, respectively. The HP version will be available Nov. 30 for $4,999.

Combining the Common Agent Architecture, Nways management packages and LAN Remote Monitor technologies would let customers use one screen to manage everything from LAN-attached desktops to LAN switches to distributed applications and databases.

While IBM is trying to standardize and simplify its management wares, it is unclear how the new architecture and products fall into the company's other strategic management initiative, SystemView.

Documents detailing the new LAN Remote Monitor, for example, make no mention of its possible role in SystemView, which is IBM's integrated object-oriented systems and management technology.

"It is incongruous and confusing to users that SystemView and this new architecture should be developed separately of one another," said Anura Guruge, an independent analyst based in New Ipswich, N.H.

Users agreed with that assessment but were nevertheless cautiously optimistic about the new IBM directions.

"The kind of LAN management tools IBM is talking about will help us more easily control and monitor LAN resources in a way that's just not possible today," said John Norris, topic advocate for Guide International Corp., a large IBM user group. "What is available today just isn't sophisticated enough to handle the complex networks that are out there." ■

Companies look to ease SNA management

Third-party SNA software vendors NetTech, Inc. and Strategic Solutions International Corp. next week will unwrap new products that will aid SNA users looking to lessen their dependency on NetView/390.

At the NetWorld+Interop show in Atlanta, NetTech will announce that it is porting its EView/Open software package to the Digital Equipment Corp. Polycenter management platform, allowing users to monitor Systems Network Architecture devices through the Unix-based Polycenter manager.

NetTech's EView/Open application resides on VTAM and gathers SNA and MVS systems alerts and alarms, as well as funnels them to Simple Network Management Protocol-based platforms. Currently, it supports IBM's NetView for AIX, NCR Corp.'s StarSentry and Hewlett-Packard Co.'s OpenView managers.

SNA alerts passed to the Polycenter platform will appear on the monitor, where EView/Open's automation features can respond automatically or the operator can fix the problem manually.

Strategic Solutions will use the show to announce a new, more powerful version of its Net/Impact software that adds automation and alert correlation features, which let users more quickly respond to network problems.

Net/Impact works much the same way as EView/Open in that it uses an agent to gather VTAM and MVS alerts and pass them to a management plaform. Net/Impact uses an OS/2 workstation to gather and display data gathered by the agent.

The company will also use the show to introduce Net/Impact 3.2, which adds 35 new automation scripts designed to simplify the lives of network operators by enabling them, for example, to start and stop devices or isolate groups of users when problems occur, said Nat Mills, president of the Manchester, Conn.-based company. There is also better physical and logical correlation of alerts, so users can see and solve problems quicker.

By Michael Cooney

Cabletron

Continued from page 1

serious challenge to rivals Hewlett-Packard Co., IBM and SunSoft, Inc., analysts said.

"I think it's a real exciting piece of work," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. "They're making it hard for [competitors] to respond to it. They're going to have to, but they haven't begun to think about it yet."

CBR will be offered as an optional software module for Spectrum 4.0, which will ship in volume in the first quarter of 1996, Cabletron officials said last week.

CBR is essentially a repository, or library, of problem-solving expertise. A Spectrum user clicks on an icon representing a faulty device and gets a pull-down menu.

From the menu, the manager will see two CBR options, according to Bill Tracy, Cabletron engineering director for Spectrum applications: Present Cases and Develop a Case. The manager can peruse the Present Cases to determine if a similar fault has occurred and been previously fixed. Or if a new method is needed to fix a problem, the manager can select Develop a Case and enter new problem-resolution information into the CBR database.

CBR can also interface with trouble-ticketing, help desk and call-tracking systems so users of those systems can tap the CBR problem-resolution database for more rapid troubleshooting and escalation.

Case-based reasoning has several benefits, proponents claim. For one thing, it has the ability to retain knowledge that is lost due to personnel turnover and attrition.

It is also adaptable to a particular network operation because network managers can update the case-based reasoning database with new techniques, said Lundy Lewis, a Cabletron research engineer.

The case-based technique is more advanced than rules-based reasoning, which is at the heart of many other expert-based network and systems management tools, Lewis argued. Rules-based systems rely on predefined rules or conditions to deal with unforeseen situations, he said. These systems, however, may lack the ability to adapt existing knowledge to a novel situation, or to learn from experience, Lewis said.

Though Cabletron may have a technological edge over competitive management platforms, work remains, according to McConnell.

"The ability to automate cases is the next step," he said. "It has to somehow collect that information automatically and then automatically run through solutions. Now they have to manually enter case information." ■

Windows NT

Continued from page 1

of database solutions, including the new policy-tracking application.

USF&G is among a growing group of companies, both new and old to client/server computing, that is choosing Microsoft Corp.'s network operating system (NOS) over Unix as a database platform. Windows NT databases are winning on price, manageability and tight integration with Windows desktop applications, even though they still fall short sometimes on their ability to handle large amounts of transactions, users and data.

"Windows NT is the fastest growing advanced operating environment, and that's reflected in a sharp increase in revenues for databases on Windows NT," said Dan Kusnetzky, research director at International Data Corp. in Framingham, Mass. (see graphic).

Among Windows NT's big wins of late was the U.S. Coast Guard's decision to deploy Informix Software, Inc. OnLine databases for Windows NT as part of a command application that will reach more than 40,000 users.

By the end of next year, sales of Windows NT databases will outpace sales of NetWare-based as well as OS/2-based databases, Kusnetzky said.

The growing demand has not been lost on database firms. Informix will ship a new version of its OnLine database for Windows NT by year-end, and around then, Sybase, Inc. is expected to ship a version of SQL Server System 11 for Windows NT. Oracle, which sells little software in the Windows NT space, is getting more aggressive, too, adding replication and many parallel processing options to the Windows NT version of its database released earlier this year.

Why NT?

The bottom line about demand for such products often is the bottom line, users said.

"When we chose [Microsoft Corp.] SQL Server on Windows NT, software price was a big factor," said Leo Kao, MIS manager for Rohm Corp., a San Jose, Calif., electronics manufacturer.

Most Windows NT-based database software is priced $600 to $900 less per user than similar Unix versions, users said.

And besides that, Kao said his company has saved money by leveraging its in-house Windows talent to manage the database servers. Implementing Unix database servers would have required shelling out money for training, he said.

The ease with which Windows NT databases can be managed can also save users money, USF&G's Schiply said. Windows NT's built-in software distribution and remote management facilities will enable the company to deploy databases at more than 50 branch offices without having to hire a database administrator at each site, he said.

The company will also save money because its support personnel will only need to be trained on one operating system, as opposed to several flavors of Unix, Schiply said.

In addition to low price, users are enticed by reliability.

"In the year and a half since we've been running our Oracle database on NT, we haven't had a crash," said Tom Blahovici, manager of information systems at Laval, Quebec-based Bio-Mega/Boehringer Ingelheim Research, Inc., a biomedical firm that tracks chemistry data in the 70-user database application. "The maintenance is so low, you just forget about it," he said.

The tight integration between Windows NT and Windows desktop applications is another benefit, Schiply said. For example, end users only need to log on once for the NOS and the database, he said.

A bundle of Windows NT databases

Product	Description	Availability
Informix OnLine for Windows NT	A scaled-down version of the company's high-end database that runs on symmetrical multiprocessing servers but lacks built-in replication.	December
Microsoft SQL Server	Windows NT database that includes built-in replication and tools for centrally managing distributed SQL Server databases.	Now
Oracle Workgroup Server	A version of the Oracle7 database that runs on Windows NT, OS/2 and NetWare and includes replication.	Now
Sybase Workgroup Server	A low-end version of SQL Server System 10 that includes built-in replication.	Now
Sybase Watcom/SQL	A desktop database that supports replication between Watcom and Sybase SQL Server databases.	Now

Such attractions as these are making Windows NT a threat not just to Unix database sales, but also to those of other database platforms. Houston-based Associated Gas Services, Inc. is moving a crop of OS/2-based Sybase SQL Servers to Windows NT.

"[Windows] NT is easier to learn and use than OS/2, and it lets us support more users [per server]," said Scott Maddox, vice president of information systems at the petroleum company. Maddox also likes that Windows NT runs on a breadth of hardware platforms so he can move up to more powerful machines without changing operating systems.

Users that have chosen Windows NT databases said they will rely on replication and network technology to push the limits of their software.

For instance, USF&G's Windows NT-based applications generally support fewer than 100 users. But the firm is gearing up to roll out an 1,800-user application that will deliver insurance claim information to customers, agents and field staff.

"We'll divide that 50G-byte database into 11 SQL Servers and use data replication to keep them in sync," said Ron Shelby, assistant vice president of USF&G's information management division.

But not all users are convinced that Windows NT databases are suitable for large-scale applications.

"I don't think [Windows NT is] suited for large-scale applications yet," said Bio-Mega's Blahovici. "At some point, you do see a tapering off in performance, so I wouldn't run a 2,000-user application off it yet."

Some users are concerned about whether Microsoft can provide the level of technical support required to keep mission-critical applications up and running. But so far, this has not been a big problem given that many of the users are dealing not only with Microsoft, but also with a database supplier accustomed to dealing with large customers.■

FRADs

Continued from page 1

provided by Memorex Telex, Inc. Users will be responsible for procuring frame relay transport services from the carrier of their choice.

Designed to launch an SNA migration wave to frame relay, WAN Assurance beats to market managed SNA-over-frame relay carrier services, notably one ex-pected toward the end of the year from AT&T under the AccuWAN banner.

NETWORLD+INTEROP PREVIEW

Because it does not provide the transport, however, I-NET will not be able to offer service-level agreements guaranteeing data delivery across the network.

"We don't own the WAN, so [offering a service-level agreement] would be pretty difficult contractually," said Paul Wickrey, Hypercom's vice president of marketing and business development.

But I-NET and Hypercom are soliciting interexchange carriers to adopt WAN Assurance as their SNA-over-frame relay management platform.

Like AT&T's general frame relay platform — which utilizes closed-loop congestion management to pace frame relay traffic rather than risk dropped data — WAN Assurance is designed to appeal to net managers who covet frame relay's speed but cannot abide data loss.

But management of the Hypercom FRADs makes it possible for I-NET to go a step further and offer congestion control at the access layer, rather than simply gate traffic at the carrier's frame relay switch, according to Wickrey.

"The key to this whole thing is session-assurance across the WAN," Wickrey said. When the network signals congestion, "our equipment throttles back to the committed information rate, preventing bursting," he said. "You have to flow-control the controller, not the switch."

This is a key advantage for WAN Assurance in satisfying the needs of SNA, said Christine Heckart, senior broadband consultant for the TeleChoice, Inc. consulting firm in Verona, N.J.

"If AT&T could do it to the end equipment, they would," Heckart said. "But with frame relay, it's very difficult to get the switches and CPE in sync."

To make up for the lack of a carrier partner, I-NET will speed carrier service provisioning by prespecifying net elements such as port speeds and CIRs for each user, said Raj Ananthanpillai, I-NET's vice president for enterprise net management.

WAN Assurance offers three service options. Under the entry-level FrameWatch option, I-NET monitors network status, isolates problems and either resolves the problem remotely or dispatches a Memorex Telex technician.

Under FrameGuard, I-NET additionally maintains statistics on network availability plus circuit and port utilization, and generates reports for customers. Under FrameResource, I-NET adds equipment asset management and remotely handles network routing and software revisions to the Hypercom gear.

FrameWatch, provided with a Hypercom IEN 1000 with a built-in data service unit, costs $238 per site per month. FrameGuard, which also utilizes the IEN 1000, costs $258 per site per month. FrameResource, under which the IEN 1000 includes an IP router for LAN internetworking applications, costs $350 a month.

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Back to Reality

Information age gurus peck holes in their collective vision

As I rushed last week to catch the 6:29 a.m. shuttle to Washington, D.C., the Delta agent glanced at my ticket and quipped, "Headed to The Circus, eh?"

He may have been right. The actual destination was the third annual Networked Economy conference, a high-powered gathering of communications, networking and entertainment industry luminaries.

David J. Buerger

The event aimed to douse us with a clear vision of "What it all means." The "it," of course, refers to the frenetic change in information technology.

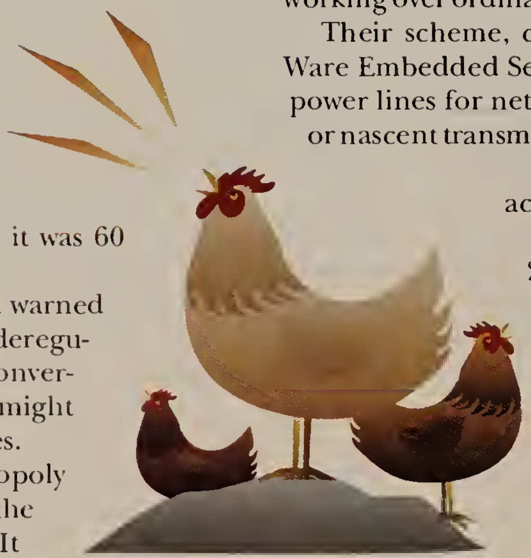
Two days of pontificating by mostly male, gray-haired CEOs and government titans reminded me of a quote from an ancient Roman writer: "A cock has great influence on its own dunghill."

Preserving power

A dominant subtext of the conference was preservation of power.

AT&T's Robert Allen, for example, complained that pending communications legislation fails to provide quantitative and qualitative definitions for local phone competition. He finds it irksome that local phone companies would be able to compete for long-distance services prior to the advent of "true" competition in the local loop.

(But, let us recall, the only way AT&T's first major competitor, MCI, could crack the Bell monopoly was through the U.S. court system.)



Bell Atlantic's Ray Smith shrugged off Allen's complaint. He claimed that there is "no abuse" of local monopoly power.

(Allen wryly noted that the local monopoly "is just as entrenched as it was 60 years ago.")

INTELSAT CEO Irving Goldstein warned of "clouds on the horizon" and said deregulation, competition, technology convergence and demanding customers might result in frustration and false promises.

(INTELSAT, the world's monopoly provider of satellite services, is in the process of a multiyear restructuring. It will create a commercial subsidiary — in April 1997.)

Looking to preserve his corner of the world, FCC Chairman Reed Hundt railed against a proposed 20% cut to his budget, claiming this would cripple the agency's efforts to enforce communications regulations.

(The FCC's budget has jumped about 80% in two years, largely to hire watchers who monitor compliance to new regulations for the cable TV monopoly.)

And even Vice President Al Gore got into the act. Speaking in his soft Tennessee drawl, Gore first cited the saying that if you see a tusk sticking through your tent, you can assume there is an elephant outside.

"Those of us in Washington who focus on the politics of communications reform," Gore told the lunch crowd, "sometimes spend too much time focused on the tusks and not enough on what is standing just outside the tent."

His voice modulated to a thunderous close, calling on the majority Republicans to keep telecommunications a nonpartisan issue. "This is exactly the wrong time to be cutting investments in innovation and destroying the blueprint that led to the unprecedented growth in activity after World War II," he said.

(The House and Senate bills are clearly "teleporK." And when was telecommunications ever nonpolitical?)

Plebes in the audience said speakers were talking to impress one another. Or to scare one another off.

The stilted organization-speak was low on vision but high on rhetorical promises to deliver the information age.

Monopolists hope to rake in gold by nudging current business organizations and practices toward the on-line buzz.

Technology, however, does not care about the status quo. Breakthrough solutions have a tendency to surprise complacent monopolists.

For example, while the old guard was defending its turf, Novell and UtiliCorp United held a small press conference in the same hotel announcing NetWare data networking over ordinary power lines.

Their scheme, called EnergyOne, is based on NetWare Embedded Services technology. Using ubiquitous power lines for network transport could displace ISDN or nascent transmissions over CATV.

EnergyOne's advantage is that the access media already exists.

Novell says it will deliver 1M and 2M bit/sec versions next year. It hopes to eventually boost that to 10M bit/sec.

Even in the first incarnation of EnergyOne, Novell is talking about speeds 15 times faster than ISDN.

Steps like these scare monopolists to death. They should. Their foot-dragging may result in irrelevance for their solutions. In-a-box thinking by monopolists is no help to users who want faster, better and cheaper entrants to the information revolution.

Big monopolies must innovate faster or suffer Western Union's fate.

Events such as the Networked Economy conference are an excellent reality check. Despite some speakers' efforts, it is easy to see through the bravado.

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ABEND

abend *(n)* **1:** abnormal end to a computer process **2:** the column that spares no expense to bring you the insights of Internet users and other high-tech wits

Memory leaks

(comp.os.linux.advocacy)

Have you ever noticed the dust that collects on and around your computer? That is not dust, but rather, escaped bits. That's why you are always needing to add more memory. That's why disk space is always at a premium, too. The disk is trying to cover up for the loss of bits in the memory banks.

The new Hamilton 95 OS

(comp.os.linux.advocacy)

You never heard of it? Been under a rock or something? It's a new killer 44-bit operating system that is blowing Win95 away. It addresses gravity-related bit and data loss, hollow-pipe networking and is 750% faster than a multiprocessed Pentium or a PowerMac 9500 running native apps. I'd tell you the speed, but it has variable speed due to unreal number addressing. I've gotten 7.866 MHz to 250 MHz. All during one app!

To install: You'll need a diamond saw, a meter of garden hose, Handi-Wrap and a level to stop gravity-related bit loss. It's a bug that'll be fixed in the Gold version.

Why no bugs at Disney World?

(rec.arts.disney.parks).

We noticed that there are very few insects at Walt Disney World (WDW). We saw only one bee and no mosquitoes. Since we understand that much of WDW's land was wetlands before construction, we were wondering what WDW does to control the bugs?

A: It is my understanding that NOBODY gets into the Disney parks without a pass, and that includes bugs. Since few insects have the wherewithal to buy a day pass, let alone a season pass, most tend to hang out in Orlando at various seedy bars. As for the ducks one sees, well, they paid their bills and are welcome.

A networking question

(rec.humor.oracle)

Dear Oracle:

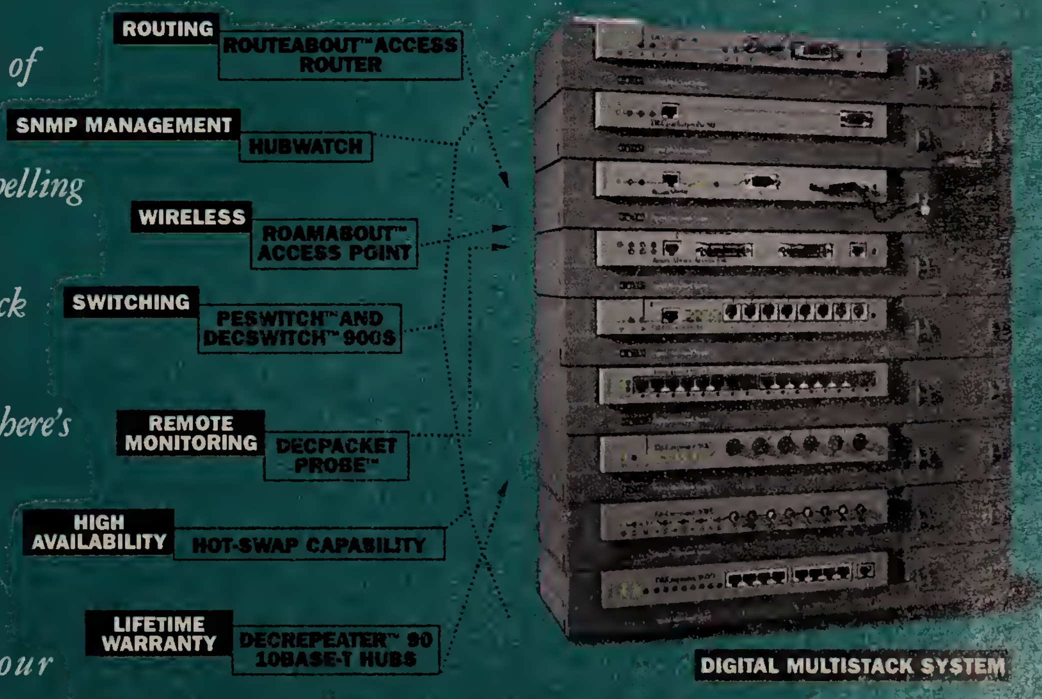
Could you please tell me: Which is the fastest, efficient, most frequently used network configuration?

And in response, thus spake the Oracle:
A 3.5-inch floppy disk and a pair of running shoes (aka SneakerNet). You owe the Oracle a faster network.

WE COULDN'T DECIDE WHETHER TO TELL YOU ABOUT THE STACKABLE THAT OUTFUNCTIONS THE COMPETITION, OR THE ONE THAT UNDERPRICES THEM.

LUCKILY, IT'S THE SAME ONE.

Decisions, decisions. Do we rave that the Digital MultiStack System has the most robust functionality in the industry? That it delivers local, remote and Internet access—not to mention wireless—so it's ideal for even the most widespread enterprises? Or should we talk dollars and cents: a starting price less than $50 per port, well below HP, 3COM and Bay Networks? Should we talk about Digital MultiStack's exceptional scalability? (It lets you add routers, switches, access servers, traffic analyzers, bridges and hubs as needed. Up to 16 hot-swappable hubs and 232 ports. So your network stays up and running, yet grows as your company does.) Or would you rather hear that our 10BaseT repeaters come with a lifetime warranty? Should we remind you that only Digital gear can be stacked or racked or chassis mounted or distributed between floors? And then managed effortlessly as a single domain with HUBwatch,™ Digital's low-cost management application? And what about an easy migration path to virtual networking? Only Digital MultiStack has one, thanks to enVISN: Digital's blueprint for the future of networks. Gee. With so many compelling reasons to pick a Digital MultiStack System, it seems there's only one choice after all. For more information contact your authorized Digital reseller or call us at 1-800-457-8211. Or e-mail to tbg@seetra.enet.dec.com



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